
Revolution in Astronomy
Bahram Katirai

REVOLUTION

IN

ASTRONOMY

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INTRODUCTION

This book offers revolutionary views with evidence that challenges some of the ideas and theories that for over a century have been considered the bedrock of astronomy.

General view among astronomers is that accurate measurements of relative parallaxes have given them accurate distances for stars. The problem with the relative parallax is the erroneous assumptions that have been made about the nature and distances of the background stars. Evidence will be presented that in the Milky Way a large number of nearby planets are mistaken as distant background stars. Such erroneous assumptions in turn have led to wrong ideas about the nature and distances of many objects in astronomy. For example, a planet and its satellite have been mistaken as double stars. Planet clusters are thought to be star clusters. A spinning planet is mistaken as a variable star that its temperature and size is assumed to change periodically. Planetary systems are mistaken as star systems (galaxies).

Chapter 1

The Viewing Range of a Large Telescope

The telescope is an instrument that, in principle, enables the observer to see the stars and planets with a much larger eye. Telescopes use either a lens or a mirror.

The larger a telescope's lens or mirror, the greater its ability to collect light, and hence the greater the distance it can see. One of the most famous telescopes, the 'Hubble' was developed by the National Aeronautics and Space Administration (NASA). Its mirror has a diameter of 2.5 meters (250 cm) directed towards the stars to collect their light. The surface area of this mirror is large - about 49,062.5 cm^2.

The following is generally how scientists think about the function of a telescope to see stars:

> *"The telescope with its reflecting mirror two hundred inches in diameter, serves as a sort of bucket to catch as much light as possible from a star and concentrate it on film: it could pick up the light of a ten watt bulb a million miles away. The purpose of the telescope is not to magnify, for no matter how great the magnification, no star would ever show up more than a point of light."* [1]

When the human eye is compared to a telescope, it is evident that the eye has its own objective lens that collects light. In a dark place, the pupil of the eye becomes wide open, so that it can collect maximum light. The circle of an open pupil in the average human eye has a diameter of about 0.7 cm and a surface area of 0.38465 cm^2. In comparison with the lens of the eye, the light-collecting surface of the Hubble telescope's objective has a diameter 357.14 times larger than that of the eye. Its surface area is about 127,551

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[1] Stanley B. Brown (editor-in Chief), Henry S. F. Cooper. *The Realm of Science*, Foundation of Physics, Touchstone Publishing Company, (1972), vol. 7, p.174.

times larger than that of the eye. This means that the Hubble telescope collects 127,551 times more light than the human eye. If all this light were used to create brighter rather than larger images than the naked eye sees, then the light of those images must be 127,551 times brighter than the images the naked eye sees. For this reason, the telescope can make a star appear 127,551 times brighter.[2]

Assuming that a star is so far away that it is barely visible to the naked eye, we know that the Hubble telescope can make the star appear 127,551 times brighter. Does this mean that the Hubble telescope enables observer to see the star if it were 127,551 times farther away? The answer is no. The *Inverse Square Law*[3] says that the light that we receive from a star is inversely proportional to the square of its distance. According to this law, at that distance, the light

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2

The following is an example from an astronomy textbook.

> ***"Example 4.1*** *Light-Gathering Power*
> *Compare the light-gathering power of the naked eye, with a pupil diameter of 5 mm, to that of a 1-m-diam telescope. Make the comparison both in terms of luminosity and magnitude.*
> ***Solution***
> *Let d_1 be the diameter of the pupil and d_2 be the diameter of the telescope. The collecting area is proportional to the square of the diameter. The ratio of the area is*
>
> $$(d_2 / d_1)^2 = (1.0\ m / 5.0 \times 10^{-3} m)^2 = 4.0 \times 10^3$$
>
> *This is the ratio of luminosities that we can see with the naked eye and with the telescope."*

Kutner Mark L., *Astronomy A Physical Perspective*, John Wiley & Sons, Inc. (1987), p. 50.

[3]The inverse square law of light says that the apparent intensity of the light of a point source is inversely proportional to the square of its distance to the observer. This means that if the distance of a star is doubled its apparent light is reduced four times. If its distance is increased three times its apparent luminosity is reduced nine times.

of the star becomes 127551^2 or 16,269,262,700, times dimmer, far too dim for us to see with the telescope.

This raises the question: What is the maximum distance an object can be seen through the Hubble telescope? The answer is 357.14 times the distance that the naked eye can see. The reason is that an object 357.14 times farther away, its light becomes 127,551 times dimmer. Since the Hubble telescope can make a star appear 1,270,551 times brighter, then looking through the telescope the star would be barely visible.

Figure 1 shows an object located at A, that is barely visible to an observer. Therefore, the distance **d** shown in the figure is the maximum distance that the object is visible to the naked eye.

If the object were at location B, a distance 357.14 times greater than **d** (Figure 2), then its light, according to the Inverse Square Law of light, would be 357.14^2, or 127,551 times dimmer. Although the object at B is invisible to the naked eye, it would be barely visible through the Hubble telescope because the telescope makes the light of the object appear 127,551 times stronger. Here we see that a very large telescope, such as the Hubble, enables us to see only 357.14 times farther than the naked eye can see.

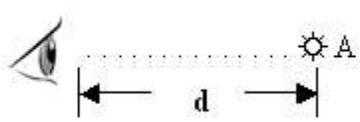


Fig. 1

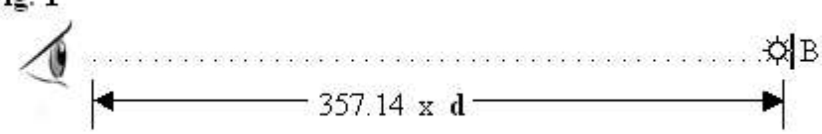


Fig 2

The object at A is barely visible to the naked eye (see Fig. 1). The light of the same object at B, 357.14 times father away, would be 357.14^2, or 127,551.02 dimmer. Since the Hubble telescope collects 127,551.02 times more light, the object is barely visible. If the object were farther away, its light would be too dim to appear in the telescope.

The calculation does not account for the magnification of the size of the object by the telescope, for any magnification causes the object to appear dimmer because the light must be dispersed over a wider area. (Magnification does not help to increase the viewing range of the telescope beyond 357.14 times the range of the human eye.) Further, the calculation assumes that the apparent size of the object remains the same, but in reality, when an object is farther away, its apparent size becomes smaller. However, this does not reduce the range of the telescope because what we are primarily concerned with is the amount of light that reaches the eye. Finally, the calculation assumes that no light from the object has been blocked by dust or dissipated in its passage through space. Otherwise, the telescope's range of view would be further reduced.

The calculation did not include photography or digital cameras or concentrating the light of stars on film, for a long period of time. In that case, the viewing range of the telescope would be several times greater. Recently, by using digital cameras, astronomers are able to further increase the viewing range of a telescope.

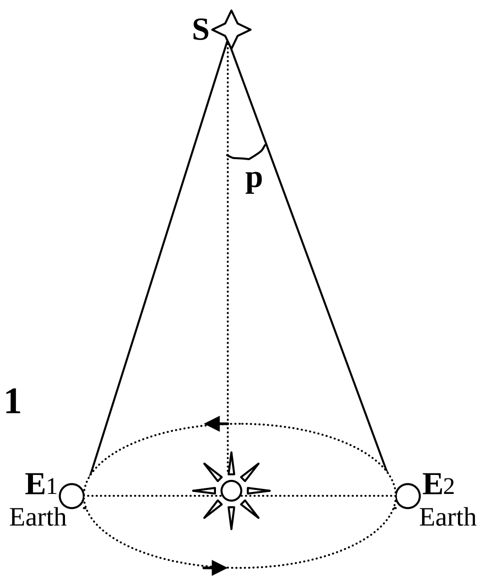
In this chapter, we investigated some of the facts about telescopes and their capacities. It was demonstrated that the capacity of a large telescope to see the distant stars has been overestimated.

The result of this calculation indicates that a very large telescope (such as the Hubble) enable observers to see only 357.14 times farther than the naked eye, pointing to wide-ranging implications regarding many theories related to size and distances of stars and galaxies.

Chapter 2
The Parallaxes of Stars

Astronomers have tried to determine the distances to many stars by a method called Trigonometric Parallax. The distances that astronomers calculated using this method are used as yard sticks to determine distances of much farther objects. If this foundation is proven to be doubtful, then, automatically, the whole scale of measurements in astronomy regarding the distances of stars, star clusters, galaxies, etc. comes into question.

Fig . 1



Trigonometric or Absolute Parallax is the angular difference in the position of an object when seen from two different places. Figure 1 shows the star **S** seen by an observer from position **E**1 on the earth, and then six month later, as the earth moves in orbit around the sun, from the position **E**2. The three points **E**1, **E**2 and **S** form a triangle. If the distance **E**1**E**2 is known and if the angle **p** (see figure 1) is measured then the distance to the object can be calculated.

However, in practice, astronomers do not look through a telescope to measure the angle **p** for finding absolute parallax. After centuries of trying, they realised that measuring the angle is too difficult and complicated and for this reason, astronomers have abandoned measurement of absolute parallaxes completely. Instead, they have turned their attention to relative parallaxes.

In order to measure relative parallaxes, astronomers take photographs of the star and its background stars. Six months later, they take another photograph of the star and its background. They repeat the process over several years in order to determine the star's displacement (parallactic motion) in relation to its background stars. These photographs are then placed under a microscope in order to measure the amount of change in position of the star of interest in relation to its background stars.

The few astronomers that have taken the difficult task of measuring parallaxes claim that by using the above method they have been able to find the distances of many stars very accurately.
They always emphasize about how accurately the measurements are made. To see what kind of problem is hidden in relative parallax. Let us ask the question - on what basis some claim that the background objects are stars? Has there been any study carried out to see whether the so-called background stars are actually stars similar to the sun? Bear in mind that a star such as the sun is a powerful source of light while a planet is only reflecting the light of the sun. It appears that from the time telescope was invented all the so-called background stars were speculated to be stars similar to the sun. In the next Chapter, evidence will be presented that the so-called background stars are actually nearby planets with significant parallaxes of their own. Unfortunately, some have assumed that the background stars are located at so great distances as to have small and negligible parallaxes. As will be explained later, the parallaxes of background stars themselves could be so significant as to cancel all or a large proportion of the parallax of the object of interest and, as a result, give a totally false distance for the object.

To give an example, let us assume that **S** is a nearby object (a planet several times farther away than Pluto) and that the distances of the background objects are only slightly greater than that of **S,** but because they appear small, faint and appear to have a very small proper motion, astronomers have mistaken them as very distant stars. In this case, there would hardly be any difference between the parallax of **S** and the parallaxes of the background objects. As a result, the relative parallax would be very small. Although the object's distance is small, astronomers measuring a very small relative parallax get the wrong idea about its distance, thinking the object's distance must be great. The fact that a very large percentage (over 25%) of all the parallaxes that astronomers measure happen to be negative indicates that all those allegedly 'background' stars are actually closer to us than the stars of interest. It shows that there is a fundamental problem with the assumption about the background objects. Unfortunately, any measurements that happen to be negative or greater than an arc-second are discarded or ignored as systematic and random error.

Assuming a planet is located at a distance only 4 times farther than Sedna[4], calculation shows that it will have an absolute parallax so small that it is equal to 7 minutes. In other words, a planet located at 500 AU from the Earth will have an absolute parallax smaller than the angular diameter of the star shown in figure 7.

If the diameter of the star in this figure were 0.7 mm and if the distance between your eyes and this figure were 34 cm, or 13.38 inches, then the angular diameter of the star would be 7 minutes.

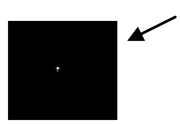


Fig. 7

The apparent angular diameter of the star in this figure is about 7 minutes, which is equal to the absolute parallax of a planet located 4 times farther than Sedna.

[4] Sedna is a dwarf planet orbiting the sun. It has a red colour and it is three times farther away than Pluto from the sun.

This gives us an idea of how small the parallax of an object is when it is located only 4 times farther than Sedna. Bear in mind that the parallax mentioned is the absolute parallax and that astronomers do not measure the absolute parallax. Instead, they measure the relative parallax that could give an amount hundreds and even thousands of times smaller than the absolute parallax.

In the following Chapters, evidence will be presented that many objects in the Milky Way that appear as distant stars are actually nearby planets. Further evidence will be given that at a distance of several times farther than Pluto there exist billions of large asteroids, thousands of planetoids and hundreds of planets that together with clouds of gas, dust, rocks and minerals appear as billions of stars. Since all these objects are very close to each other, from earth they all would show very small relative parallaxes, giving us the false idea that these objects are stars and are located at such great distances that the nearest one is thought to be 4.3 light-years away.

Chapter 3
Planetoids and Planets Mistaken for Stars

Studying the history of astronomy, one finds that ancient astronomers thought all luminous objects in the sky were stars, except for the sun and the moon. Later, some were renamed planets, meaning ‘wandering stars’, after it was observed that they demonstrated movement. Although today astronomers can easily distinguish planets that are very close to us from stars, almost nothing has changed for distant planets except that in 2006, a few distant objects thought to be stars, were taken from the list of stars and added to the list of planetoids or planets after noticing a change in their position.

In previous chapters, it has been proven that the ability of telescopes to see distant stars has been greatly exaggerated. It was also reasoned that star distances determined by the relative parallax method could be wrong.

This method, accepted as the most accurate tool for determining star distance, may have given distances hundreds or even thousands of times greater than actual distances. Distance is paramount to the calculation of luminosity, size, mass and density.

With these possibilities in mind, we are led to an important question. Could it be that many objects thought to be stars are actually planetoids or planets that have been mistaken for stars? Until a few decades ago astronomers had difficulty studying our neighbouring planets.

The following quotation from the Cambridge Encyclopaedia of Astronomy gives us some idea about the kinds of difficulties involved in research about the planets Uranus and Neptune:

> "*Uranus and Neptune are difficult bodies to study…Telescopically, Uranus appears as a small bluish-green disc about four seconds of arc in diameter. The best modern observations, even with large telescopes,…, show no surface features..….*
> *Certainly neither planet has any surface features that can be used to determine the rotation period….*"[5]

The planet Uranus is only 17 to 21 AU away from us.

The following is a quote from NASA giving an idea of how small Pluto appears through a large and modern telescope.

> *"Discovered in 1930, Pluto has always appeared as nothing more than a dot of light in even the largest ground-based telescopes because Pluto's disk is much smaller than can be resolved from beneath the Earth's turbulent atmosphere. "*[6]

For those who are not familiar with astronomy or those who have never looked through a telescope, below is an explanation of how a star is distinguished from a planet (with the exception of Pluto).

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[5] The Cambridge Encyclopædia of Astronomy, Prentice-Hall of Canada, Ltd, Trewin Copplestone Publishing Ltd, (1977), p. 224-225

[6] See website: "Goddard Space Sciences Pictures
These images, taken March 7, 1996, by the Solar and Heliospheris Observatory"

> *"With a telescope, a planet may be immediately distinguished from a star (with the exception of the planet Pluto or the asteroids) because of the fact that a planet will show an appreciable disk, whereas the stars appear as points of light no matter how much magnification is used.[7]"*

The reason Pluto is an exception is because it seems to appear as a star (that is a point of light with no visible disc) even with a large telescope. The reason Pluto could be classified as a planet rather than a star was on the basis of its apparent motion against other background objects.

> "*Pluto doesn't stand out very well against the background of stars. It is detectable as a planet only by its very slow motion with respect to the stars."* [8]

> *"The planet is so small that it looks like a star and it is only its motion across the sky that allows it to be distinguished as a planet. (McDonald Obervatory)"*[9]

The claim that Pluto is detectable as a planet only by its motion with respect to background stars raises a very important question. Could it be that other objects astronomers have interpreted as stars be actual planets? Could it be that beyond Pluto there exist many planets that astronomers have mistaken for stars?

The question that comes to mind is that how planets are distinguished from stars?

One such method used to study luminous points is their colour. Unfortunately, before determining if these objects are planets

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[7] *Van Nostrand's Scientific Encyclopedias*, sixth Edition, Van Nostrand Reinhold Company, New York, Toronto, (1983), p.2248.

[8] Kutner Marc L., *Astronomy: A physical perspective*, John Wiley & Sons, (1987), p.592.

[9] *The Cambridge Encyclopædia of Astronomy*, Prentice-Hall of Canada, (1977), p. 227.

or stars, some have speculated that almost all distant objects, no matter what colour, must be stars. According to astronomers, the colour of a star is an indication of its temperature: For example, well-known astronomer Fred Hoyle writes:

> *"Everyday observation tells us that the hotter a fire burns the bluer the light it emits. Hence our sequence of stars from blue to red, or from type O to type M, is a temperature sequence, the O stars being the hottest and the M stars the coolest at their surfaces."* [10]

The idea is based on Wilhelm Wien's studies in 1893. He showed that the colour of a glowing body is related to its temperature in a definite mathematical way, called 'Wein's Law'. From coolest to hottest, the colour sequence is red, orange, yellow, white, and blue. A glowing body with a temperature of 500 to 1,000 degrees Celsius will have a reddish colour. A body with a temperature 1,100 to 1,300°C will have a yellowish colour. A glowing object with a temperature above 1400° will have a whitish colour. Finally, a glowing body with a temperature of 1,600°C will have a dazzling white (blue white) colour[11].

Astronomers have applied Wein's law to all luminous objects without first differentiating between objects that emit light and those that reflect light. Consider the claims that the colour blue indicates a very hot star. We know that Uranus has a blue colour. It is therefore certain that planets can be blue. Is there any premise from which to assume that a star could be blue? On the contrary, astronomers believe that the surface of the sun is about 5,700°C and that they claim that just above the surface of the sun, the temperature is over one million degrees. The sun despite its high temperature is not blue.

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[10] Hoyle Fred, *Astronomy*, Crescent Books, Inc. p. 208
[11] This information can be found on the Internet and in many scientific books.

"Our sun is really very hot. The sun's outer atmosphere is so hot that it emits much light in X-ray bands, which was unexpected[12]."

It follows that the possibility of a star being blue need not be correct.

Astronomers studying distant objects obtain most of their important information by examining various types of photographs. Recently, astronomers were able to develop a technique that enables them to take photographs of the Milky Way in true colour. Figure 1 shows Uranus. Figure 2 shows two objects that astronomers claim to be stars. The author has presented these two photographs side-by-side in order to show how the object that astronomers claim to be a star is actually similar to the planet Uranus. Please note how the colour of the object in the figure 2 is very similar to that of the planet Uranus.

The planet Uranus
and its moon

Astronomers believe that
these two objects are stars.

[12] See NASA's website archive "Astronomy Picture of the Day", October 4, 1995, The Sun Spews X-rays.

Fig. 1 Credit: Ed Grafton

The planet Uranus and its moons

Fig. 2 Credit: Ed Grafton

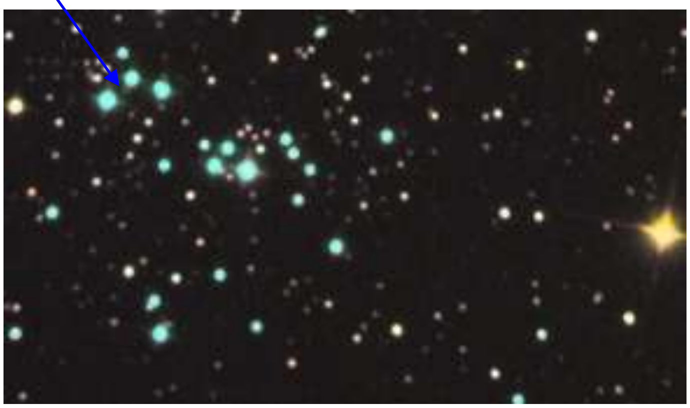
Astronomers call these objects that are in the Constellation Lepus “Double Star Gamma”

If we examine the light of all celestial objects having a blue colour, we see that they are always dull, meaning they do not shine like stars.

The following are two photographs, one on the left (figure 3) showing images of many objects that astronomers claim to be stars, and the other on the right (Figure 4) showing the planet Uranus. These two photographs side-by-side further show how some of the objects that astronomer claim to be stars are actually similar to the planet. Please note how sharp the boundaries of the disk of the blue objects that astronomers claim to be stars. In contrast, the bright and yellowish object seen in figure 3 is very similar to the sun and therefore must be a star and could not be a planet because, it does not resemble, in colour or brightness to that of a planet.

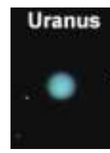
These bluish objects (figure 3) that are thought to be stars must be planets. Notice how they are similar to the planet Uranus in figure 4.

A distant star



Credit: Ed Grafton

Fig. 3



Credit: Ed Grafton

Fig. 4

Astronomers believe that all the objects in the figure 1 are stars. However, the author believes that almost all the objects in figure 3 except the bright and yellowish object indicated by an arrow are planets. Please note how the colour, faintness and the disc of some of the blue objects are exactly similar to that of planet Uranus shown in figure 4.

Let us further investigate the claim that the colour blue indicates a very hot star and orange objects indicate a much cooler star. If one looks at the objects in a star cluster (see figure 5), one sees that blue objects in comparison to orange objects of the same size are very faint. (Astronomers generally agree that the distances of all objects in a star cluster are more or less the same.) This clearly shows that blue objects could not have higher temperatures than orange objects, because if they did they would be many times brighter.

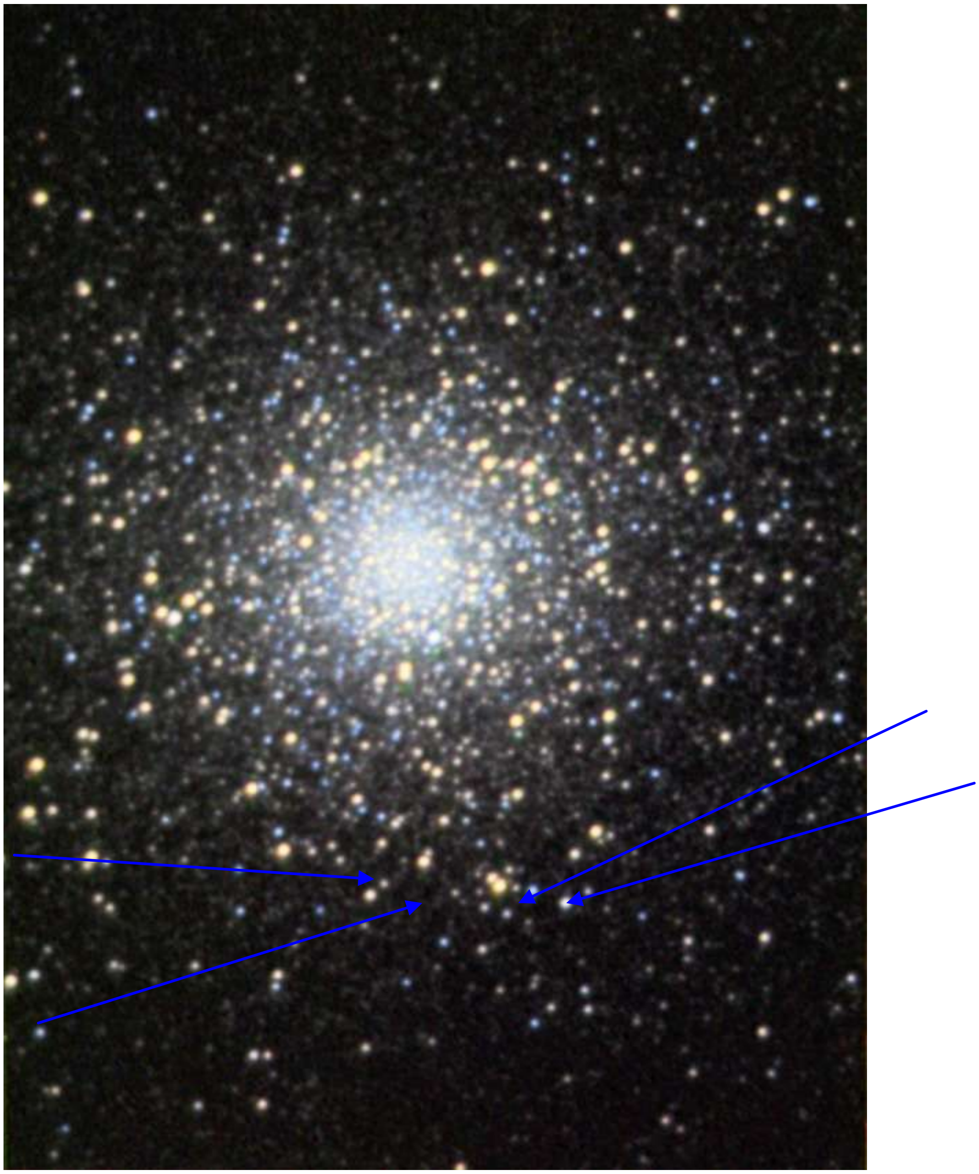
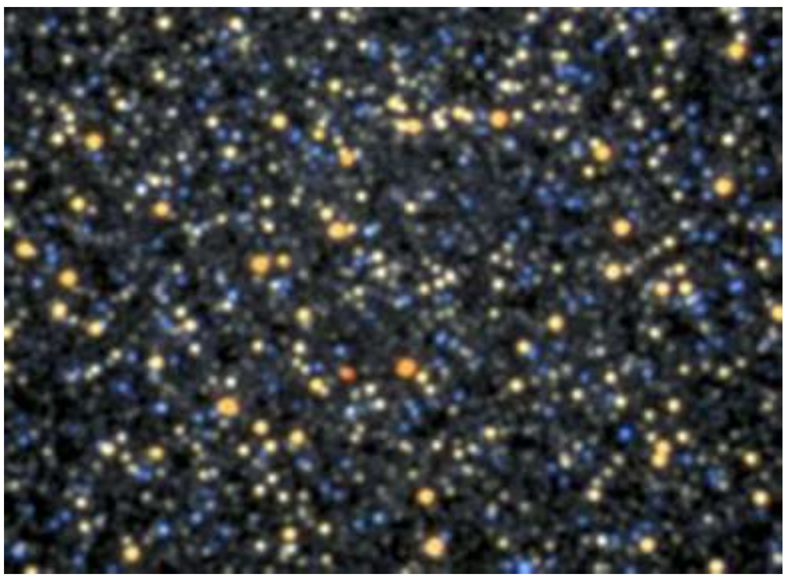


Fig. 5

Another example, Figure 6 shows the globular cluster NGC5139. If we choose two objects that have the same size but one is blue and the other orange, we see that the blue object is not brighter than the orange object. These comparisons provide clear evidence that blue colour has nothing to do with being hot stars and that the objects could in fact be planets.



Globular cluster NGC5139 Credit: S. Kohle

Fig. 6

If we study the colours of all the companions of binaries, we find that some are emerald green, others are sapphire blue, deep red, or turquoise. All these colours could easily relate to planets rather than stars. Is it not a fact that Uranus and Neptune are bluish green, and that Mars is red? Since all stars are not as hot as the sun, it is reasonable to assume that the colour of some of cooler stars could be red.

One of the most important and reliable methods that can be used to distinguish stars from planets is to find out which ones are strong sources of heat radiation. Heat radiation is also called infrared radiation. In 1800 William Herschel dispersed solar light through a glass prism and projected the colours onto a row of thermometers. He discovered the warming effect of an invisible "infrared" in dark space "beyond the red." Although infrared is invisible to the eye our body can sense its warming effect.

> "*Infrared radiation is emitted by any object that has a temperature (ie radiates heat). So, basically all celestial objects emit some infrared. The wavelength at which an object radiates most intensely depends on its temperature. In general, as the temperature of an object cools, it shows up more prominently at farther infrared wavelengths. As we move from the near-infrared into mid and far-infrared regions of the spectrum, some celestial objects will appear while others will disappear from view."*
>
> *"When an object is not quite hot enough to radiate visible light, it will emit most of its energy in infrared. For example, hot charcoal may not give off light but it does emit infrared radiation which we feel as heat. The warmer the object, the more infrared radiation it emits."* [13]

The fact that the sun is a star with a high temperature and that it is a strong source of infrared radiation, it is reasonable to assume that any hot stars must be strong sources of infrared radiation. However, when astronomers mapped the sky and determined the infrared radiation from the blue and allegedly hot stars in the neighbourhood of the sun they were surprised and puzzled to learn

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[13] 'Infrared Astronomy – overview'

that all these objects were not hot at all[14]. The following is a quote from NASA about blue stars that are not visible in the infrared spectrum, indicating that these blue objects are cold and do not radiate sufficient heat to be visible.

> *"Moving away from visible light towards longer wavelengths of light we enter the infrared region. In the near-infrared region, the hot blue stars seen clearly in visible light fade out and cooler stars such as red dwarfs and red giants come into view. ……..*
>
> *As we enter the mid-infrared region of the spectrum, the cool stars begin to fade out and cooler objects such as planets, comets and asteroids come into view………*
>
> *In the far-infrared, the stars have all vanished. Instead we now see very cold matter."* [15]

Please note that blue stars, thought to be hot stars, do not show up because they do not radiate sufficient heat. Moreover, the reason the blue objects are cooler than nearby planets and cannot be seen among planets, comets and asteroids is because they are much farther away from the sun and reflect much less heat of the sun.

Unfortunately, instead of examining the possibility that these blue and cold objects could be planets instead of hot stars, astronomers twisted the fundamental law of physics and invented a new and imaginary idea. They speculated that the reason these objects do not emit any heat radiation is because these objects are extremely hot and therefore emit most of their energy in ultraviolet light. In other words, they invented the idea that the blue objects are so hot that instead of heat they give ultraviolet light.

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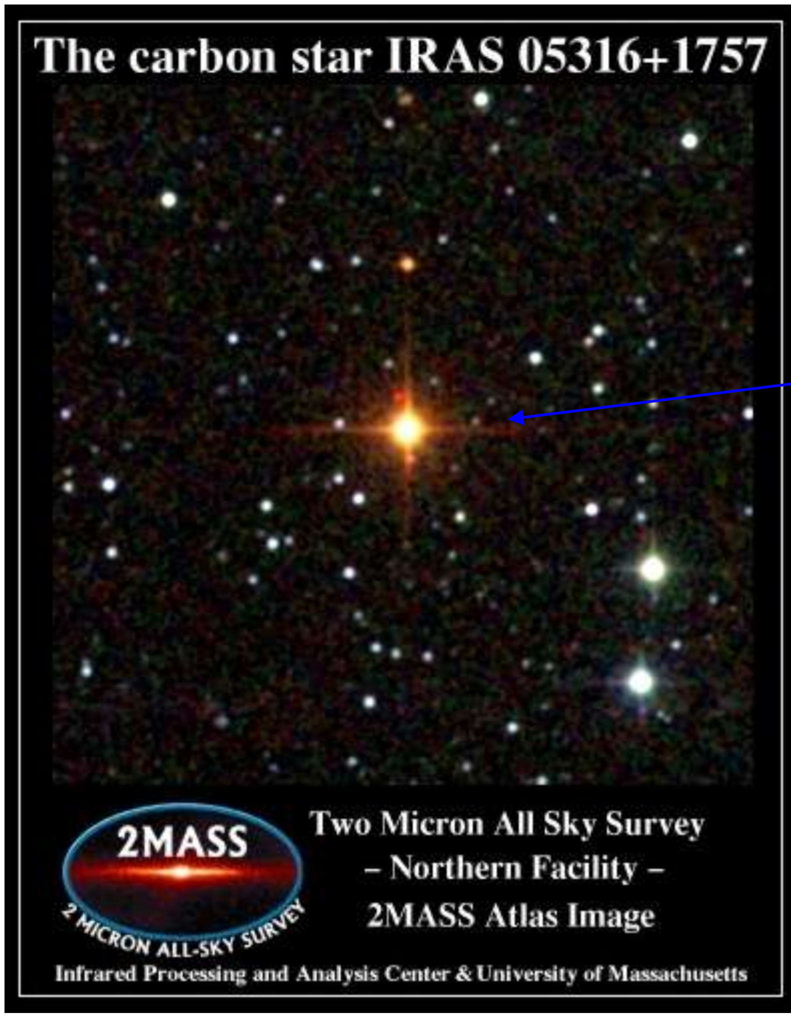
[14] "The Infrared Universe – stars" IRAS Point Source All Sky Map. Ipac, NASA

[15] http://coolcosmos.ipac.caltech.edu/cosmic_classroom/cosmic_reference/nearmidfar.html
"cool cosmos-near, mid & far Infrared"

Some claim that the planets are among the most prominent sources of heat but we know that in the solar system the sun is the main source of infrared (heat) radiation and not the planets. We know also that planets in the solar system are only reflecting the light of the sun. All these planets must also reflect the infrared radiation that they receive from the sun. Just as the light that we receive from the planets is only the reflection of the light of the sun similarly, the infrared radiation that we receive from the planets is only the reflection of the heat of the sun. The sun is the source of all these energies. What a difference between the intensity of energies of the source to that of reflection. What a great difference between the intensity of the light and heat we receive from the sun to the intensity of the light and heat that we receive from the planets. Bear in mind that the atmosphere of the earth blocks most of the infrared radiation that we receive from the sun, otherwise its heat would be very deadly.

The following is an infrared photograph. Since hot stars are sources of infrared radiation then an infrared photograph should show the hottest object as the brightest one. Notice how bright the star indicated by an arrow is and how it is similar to the sun. All the bluish objects, in comparison to that star appear as planets, very dull and faint.



This infrared photograph shows a star and many faint and whitish objects. The author believes that all the whitish objects are planets that belong to the Milky Way. According to Professor Pickering that star is located far beyond the limit of the Milky Way but because of its great luminosity it shows up among the objects belonging to the Milky Way.

Although the distance of that bright star from Earth is many times greater than that of those planets but still it appears the brightest.

Another method to distinguish a star from a planet is spectrum analysis of the light coming from any given object.

Stellar spectra were first observed in the middle of the 19th century. Harvard Professor Edward C. Pickering, the leading astronomer of his time, lettered the stars according to the strength of their hydrogen spectral lines. It was he who realized that all objects in the Milky Way had spectra very different from the sun.

Pickering examined various parts of the sky visible from the northern hemisphere. A large number of stars were studied by capturing their spectra on photographic plates. The conclusion he arrived at was very significant. He found that stars that resemble the sun in character are distributed with near uniformity over the surface of the sky. They almost evenly spread elsewhere as they are over the surface of the Milky Way. The whitish or bluish objects such as Sirius that have a group of strongly marked dark lines in their spectrum (indicating the existence of hydrogen as an important constituent in their atmosphere), are however, much more numerous, relatively speaking, on the Milky Way than in other parts of the sky. Professor Pickering's research showed that the Milky Way is little more than an aggregation of objects of the type to which Sirius belongs. He noticed that the spectrum of all these objects is different from that of the sun. In other words, his research showed that the spectrum of the sun among all the objects in the Milky Way is unique.[16] For that reason, he further concluded, "*though the sun happens at present to lie within the compass of the Milky Way, it does not truly belong to that sidereal system.*"

Unfortunately Professor Pickering did not realize that all the whitish or bluish objects that he thought were stars are actually planets belonging to the sun. That is why the spectrum of the sun among all these objects is unique. (This will be discussed further in Chapter 13.)

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[16] Pickering Edward C.1904. Distribution of Stellar Spectra, *Annals of Harvard College Observatory*, 56, 1. see also - 1905, Stars Having Spectra of Class B. *Annals of Harvard College Observatory*, 56, 27.

The fact that all the luminous objects in the Milky Way have spectra very different from the sun tells us that these objects could have natures fundamentally different from the sun. For what reasons were they assumed to be stars? There is absolutely no evidence supporting this speculation. Unfortunately, regardless of spectrum evidence, all were speculated to be stars.

Based on a survey of the literature conducted by the author, it appears that no spectrum analyses were ever carried out for the sole purpose of differentiating stars from planets. It appears that no one has ever seriously considered the possibility that the objects in the Milky Way could be planets or asteroids.

A method that could be used to differentiate between stars and planets is to study the radio images of the objects. The following radio images give us a different means by which we can look at the objects in the Milky Way. These images, taken by the Canadian Galactic Plane Survey (CGPS), show the Cygnus region within our own Milky Way.[17]They show that the objects in the Milky Way appear to be planets instead of stars.

[17] The image was created by Jayanne English (University of Manitoba) and Russ Taylor (University of Calgary), from the data collected by Dominion Radio Astrophysics Observatory and the Infrared Astronomical Satellite.

Fig. 1

Canadian Galactic Plane Survey (CGPS), showing the Cygnus region in the Milky Way

If the Milky Way were made of stars, then we could see images of those stars in this photograph. Instead, we see clouds and several objects appear to be asteroids or planets within the clouds, but no objects that could be called stars. Furthermore, if the objects were stars, they would have illuminated their surrounding clouds. The photograph shows that both the objects and the clouds are reflecting, rather than giving, light.

The next radio astronomy image shows another section of the Milky Way.

The Canadian Galactic Plane Survey (CGPS) image showing the Cygnus region in Milky Way.

Fig. 2

A method that could be used to differentiate between stars and planets is to find out which ones are strong sources of x-rays or gamma rays. If we compare the sun with all the planets in the solar system, we see that the sun is a strong source of x-rays and gamma rays, whereas planets are not. If the sun is a typical star, then other stars must also be strong sources of x-rays and gamma rays. A strong detection of x-ray or gamma ray emission from any luminous point should therefore be taken as an indication that it could be a star. To the author's knowledge, to date this method has not been used to differentiate between stars and planets.

Another method is the measurement of parallax. In theory, the parallax method can tell us the distances of nearby objects. By knowing these distances, one can reasonably determine if these objects are planets or stars. For example, if we find that these distances are only 200 AU or 27.7 light-hours, then most probably they are planets because if they were stars, their apparent luminosity would be many times greater. On the other hand, if we find that distances involve many light-years, this would indicate that the objects are stars, since planets should be absolutely invisible from such a long distance. Although, in theory the parallax method should provide the correct information about star distance, in practice it has not, which in turn has caused planets to be mistaken for stars.

Another method, a suggestion by the author, could determine not only the relative distances of luminous points, but also help to determine if objects are stars or planets. At present, we are using only one telescope at a time. It is as if we are looking at stars with only one eye. The limitation of looking through only one telescope is that everything appears to be located on the same plane in only two dimensions. However, if we could use two telescopes separated by great distances[18], and simultaneously either take a picture or look electronically[19], using three-dimensional instruments, we would have a three dimensional view of stars. We would be able to accurately determine their relative distances, measure parallaxes accurately, calculate their size, distinguish whether they are planets or stars, and obtain greater information about their nature. This method would also eliminate the parallax problem of waiting six months between

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[18] The telescopes could be placed either in space widely separated, or on earth in separate continents.

[19] The author has patented an invention, called Wide angle and 3D television that could be used to provide a three dimensional view of stars. See Canadian patent; 2,136,889.

pictures, during which objects move considerable distances and the changes of many variables occur.

Another method astronomers use to determine whether an object is a star or a planet is to study its proper motion – its apparent movement in relation to other luminous points. If its apparent displacement were much faster than others, its distance, most probably, would be much less than the others. Some asteroids and planets can be distinguished from stars by their fast displacement relative to other points. Unfortunately, many of the objects that have large proper motion have been thought to be stars, but in reality are distant planets or planetoids belonging to our solar system. One of the reasons that could suggests this is that in the early twentieth century astronomers noticed that all luminous objects nearer to the sun actually move faster than those further away.

> *"These stars are known as high-velocity stars, a name derived from the fact that those close by the sun are moving faster."* [20]

We know that the closer a planet is to the sun the faster it revolves around it. Our literature survey it seems that the possibility has not been raised and the reason for this is that they are orbiting the sun.

Another overlooked method of distinguishing between stars and planets is to study their orbital motions. First of all, we know that in a solar system, the planets revolve around the sun. There are currently no known examples of a star revolving around another star. The hypothesis that there could exist a system in which a star circles another star has yet to be proven. Some speculate that many binaries are comprised of two stars circling one another. By studying the period of orbit of many binaries, it was found that many of them are very short. Some complete their orbit in a few hours, some less than an hour. Moreover, Doppler Effect studies revealed that in many

[20] Hoyle Fred, *Astronomy*, Crescent Books, p. 258.

cases, the orbital velocities of these objects around their companion were small. This proves that the size of orbit and the distance separating the two members of the binary must be small. This, in turn, suggests that the size of these objects must be small.

However, as we have seen, the parallax method had misled astronomers into thinking that the mass of these small objects must be great - many times greater than the sun. The inexplicable problem remained: how could an object with such a large mass have such a small size (volume)? In answer to this puzzle new theoretical objects cropped up in the literature, including such phenomena as "collapsed stars", "neutron stars" or even "black holes", with masses many times the sun but with volumes millions of times smaller than the sun. These in turn led to speculate that these hypothetical objects would have such a fantastic gravitational force that they could bend time and space.

On the other hand, if these objects are considered as planets, all problems are solved without the need of inventing imaginary and fantastic objects that could have nothing to do with reality.

Chapter 4
Planet Clusters Mistaken for Star Clusters

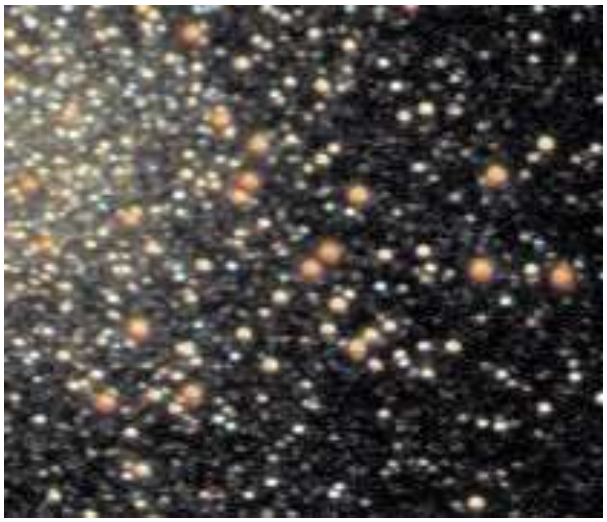
In this chapter, evidence will be presented to show that a star cluster is actually a planet cluster, and that globular clusters do not contain any stars. Evidence will further be presented that the distances of all these visible objects must be in light hours rather than tens of thousands of light years.

From the time astronomers discovered that some luminous objects are grouped together forming a cluster, they came up with the phrase "star cluster". It seems they speculated that all luminous objects in the cluster must be stars.

Let us examine the photographs of globular clusters to see if the objects in a cluster are stars or planetoids, and also to see whether they are distant or nearby objects. The photographs of many globular clusters reveal that some objects do not appear as small points of light, but rather as significant discs. As mentioned in previous chapters, calculation shows that a star the size of our sun located a distance of a few light-years away, no matter how great the magnification by telescope, would never show up larger than a point of light. The fact that with small telescopes many objects in a cluster show up with relatively large discs indicates they are close – i.e. light hours away rather than thousands or millions of light-years, specially considering the fact that their light always is very pale indicating they are not intrinsically bright at all. Astronomers agree that objects in star clusters are always faint and dull. For this reason, they speculated that the objects in a cluster must be burnt out stars. They did not consider the possibility that the objects could be planetoids or planets rather than stars.

M22 in the Constellation Sagittarius. Credit: Ed Grafton

Fig. 1



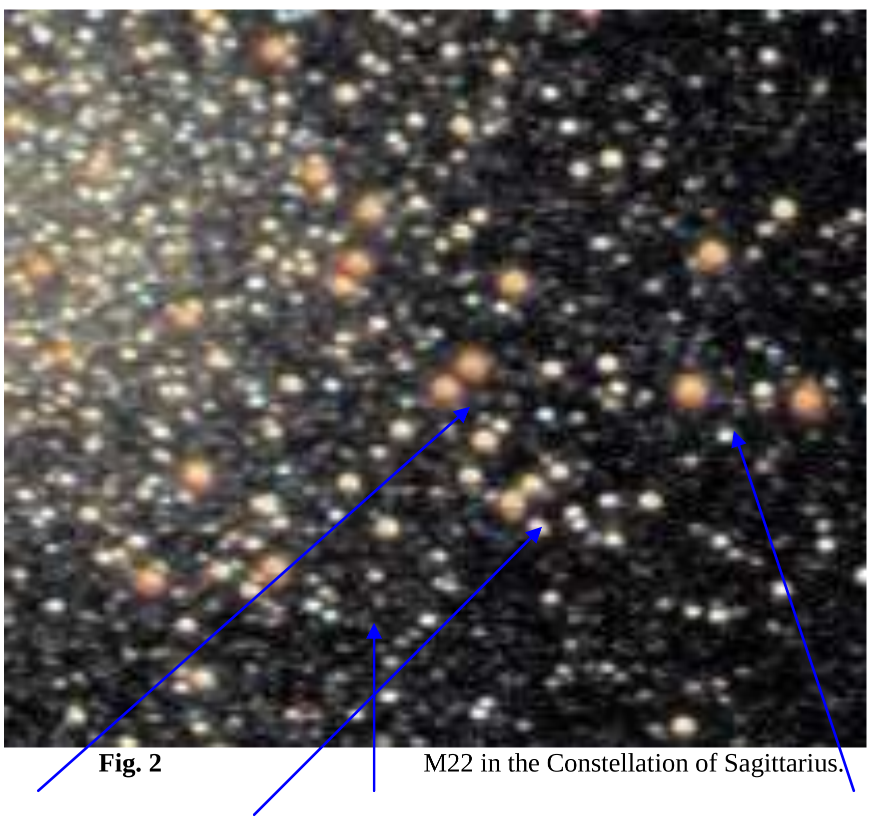
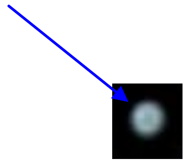


Fig. 2 M22 in the Constellation of Sagittarius.

Planet Mars
Fig. 3

Mars
Fig. 4



Uranus
Fig. 6

Planet Mars
Fig. 7

Looking at the photograph (figure 2) and comparing one of the reddish objects in the cluster that is shown by an arrow, to that of the planet Mars (see figure 3, 4 and 7), one sees that in many respects they are very similar. Since Mars is a nearby object, it shows up with a large disc in a photograph taken with a CCD camera and with a small telescope. The object in the cluster also shows up with a large disc. The light of both is dull and faint. Comparing one of the bluish objects in the cluster, shown by an arrow, to that of the planet Uranus (see figure 6), one sees that in colour and faintness they are very similar to each other and that they show up with significant discs

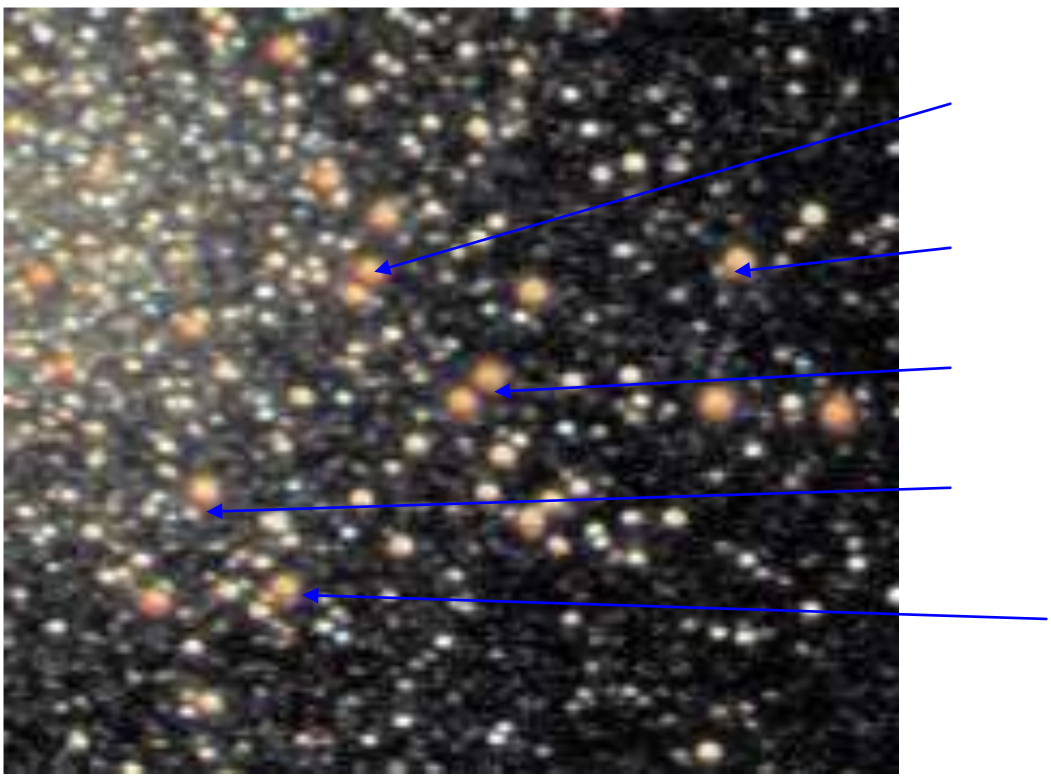
If one looks at the recent CCD images of star clusters one finds clear and compelling evidence to the argument that the objects are planetoids or planets rather than stars. For example, figure 7 shows one star located in close proximity to a star cluster. Notice how bright the star is in comparison to the objects in the star cluster. The star is giving light, exactly similar to the sun. In contrast, the objects in the cluster are reflecting light, quite similar to the planets.

Globular Cluster M53 (NGC 5024) in Constellation of Coma Berenices.
Credit: Till Credner, Sven Kohe Astronomical Institut of the University of Bonn

Fig. 7

The author suspects that the distances of some of the globular clusters could be even closer to us than that of Pluto, but because they are very faint and move very slowly (as they are located away from the plane of the Milky Way), their distances are presumed to be tens of thousands of light years away. If a spacecraft were to be sent towards one of the so-called star clusters and were to observe how the apparent size of the objects in the cluster increases as the distance to them decreases, it would be easy to tell how close they are to Earth.

Considering that these objects would show up faint and with significant discs when viewed through a small telescope indicates they are very near to us. It should not be surprising that all of them may be reflecting the light of the sun. That is the reason why in figure 8 the shadows of objects can be seen on the objects that are located farther back behind them. The arrow shows an example of a shadow created by one over the other behind it. If the objects were stars giving light, instead of shadow we should see brighter spots, as the light of both objects would have been trapped and enhanced each other's light.

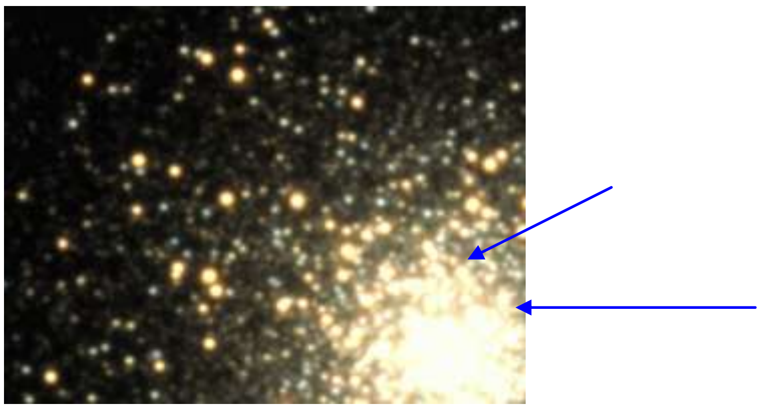


M22 in the Constellation of Sagittarius.

Fig 8

If we look at the images of a cluster (see figure 8) we see that objects in the forefront are brighter than those farther back.

The fact that there is great contrast in faintness between the objects that are inside the cavities (identified by the arrows in the figure 9) and those surrounding the cavities indicates that the objects are reflecting the light of the sun.



Credit: Joel Hartman and Krzyfztof Stanek

Fig. 9

A star cluster photographed by Al Kelly

Fig. 10

A star cluster photographed by Al Kelly

Fig. 11

A star cluster photographed by Al Kelly

Fig. 12

Fig. 12

It is a common belief that the objects in a cluster are stars. It is also believed that their colours indicate their temperatures. Orange objects are considered to be cooler than white objects and the white objects must be cooler than blue objects.

If one looks at the blue and yellow objects indicated by the arrows in the above image, one notices that both objects have the same brightness. Although the distance and size of the objects are the same[21], the blue object is not brighter than the yellow object. Looking at two objects with the same size but different colours, one blue and the other orange, we see that the blue object (supposedly the hottest and brightest) is actually fainter than the orange object. The orange objects that were supposed to be cooler than both white and blue objects, happen to be the brightest, exactly the opposite of the common beliefs described above. The photo demonstrates the error of prevailing assumptions about temperature and colour. These objects are not hot at all. What this means is that the objects could be planetoids rather than stars.

Spectroscopic study of the objects in a globular cluster reveals that these objects have different constitutions than that of our sun, taken as a typical star.

Further confirmation that these objects ("cluster-type Cepheids") may be planetoids is the discovery that the light of some of them is variable. This subject will be studied in the next chapter.

The author suggests that images of star clusters are actually a view of how large planets are created. All the planetoids or asteroids are slowly coming together and the combination of a large number of them creates a large body. The planetoids or asteroids are created by condensation of clouds of minerals. In most circumstances the clouds do not condense into one large body, such as a planet, all at once.

[21] Astronomers agree that since all of the objects belonging to a star cluster have more or less the same distance, then two objects that appear to have equal discs must actually be the same size.

Within the clouds many individual packets, asteroids, are created. The relatively small gravitational forces of these asteroids slowly force them to combine into larger objects, such as planetoids. Many planetoids combine into much larger objects creating large planets.

When cloud density is high, the process of condensation into asteroids or planetoids is much faster and the formed planetoids or asteroids are so closely packed that from a distance, they may appear as one body. However, when cloud density is low, the condensation into planetoids is much slower and the distances between newly formed planetoids are much greater. Looking at these planetoids from a distance, as they reflect the light of the sun, they appear as a cluster of stars. In the same way as the distant planet Pluto reflects the light of the sun so well that it is often mistaken for a star, similarly the objects in a cluster reflect the light of the sun.

Based on the fact that objects in a cluster are very faint and do not shine like stars, some have advanced a theory that they must be very old, burnt out stars, and claimed them to be *the oldest known objects related to our galaxy*.[22] On the contrary, the understanding that these objects are planetoids and not worn out or burnt out stars, leads us to the understanding that they are young, not old, probably the youngest objects in the Milky Way galaxy. The reason they are the youngest is because the condensing clouds are away from the galactic plane and are not very much subject to the disturbance and pressure of the solar wind.

The idea that the objects in a cluster are possibly planetoids has a very significant ramification in the world of astronomy. Many theories are based on the speculation that they are stars. For example, the famous Period and Luminosity Relation and the *main sequence stars* are based on the speculation and assumption that objects in a cluster are all stars. If, in fact, this fundamental assumption is faulty, then the whole idea of H-R diagram and main sequence is disproved. This in turn like a domino effect disproves many theories that are built on the idea of main sequence. Based on the speculation that

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[22] Bok Bart J., and Bok Priscilla F., *The Milky Way*, Fifth Edition, Harvard University Press, (1981), p. 144.

objects in a star cluster are stars, astronomers believe that distances to the clusters are in tens or even hundreds of thousands of light-years, rather than a several light hours or days.

Chapter 5
Variable Stars or Spinning Planets

Astronomers studying the objects in star clusters have noticed that the light of some fades periodically, and their periods of fluctuation are less than a day. Astronomers call these objects variable stars or Cepheids. What causes this change in light value in such a short time? Astronomers believe that the change in light is caused by the change in size and temperature of the star. The following is a quote from a University textbook.

> *When we study the spectral lines of Cepheids, we can detect Doppler shifts that vary throughout the light cycle. The Doppler shifts go through a cycle in the same period as the light. This means that the surface of the star is moving. The size of the star changes as the luminosity changes. The spectral type also changes throughout the cycle. The luminosity change is therefore associated with changes in radius and surface temperature.*[23]

However, upon investigation, it becomes clear that the change could not possibly be caused by an alteration in size and temperature, because such large, massive and glowing objects could not possibly cool down and shrink and then heat up and swell in such short periods of time. However, if we consider that the object is a planet then it is reasonable to see that it is spinning and that the change in its light is caused by its spin. As the object spins the side that is a better reflector of light facing Earth, appears bright. When this side turns around and faces away from Earth then the object appear darker.

As an example, consider planet Earth: If we divide it into a land hemisphere which includes half of the earth with mostly land,

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[23] Kutner Marc L., *Astronomy: A Physical Perspective*, John Wiley & Sons, 1987, p. 234.

and the other hemisphere with mostly water, we find that the water hemisphere is better reflector of the light of the sun than the land hemisphere. Looking at Planet Earth from a great distance, the observation of the reflected light as it spins would show periodic change in its light.

It is this type of light change that has been misinterpreted when viewing other celestial bodies as temperature and size changes. As the earth rotates when the water hemisphere from behind moves to the side and slowly faces an observer it would appear that it is moving towards the observer, becoming larger and brighter. Later, when the water hemisphere moves slowly to the side to face away from the observer, it would appear to be moving away from the observer, becoming smaller and dimmer. This type of motion has been misinterpreted as a change in the actual size of the object. Moreover, the change from water into land would naturally show a change in spectral type. This type of change in spectral type has been misinterpreted as change in temperature.

. One need not to be an astronomer to see that it is not reasonable to speculate that the temperature of a hot and glowing star would change so drastically in such short period of time that its size would change so significantly.

If one takes a series of digital pictures of an object in a star cluster that its light were variable with a short period of fluctuation, and then the pictures were viewed in rapid succession, it should be possible to see the object spin by seeing light appear from one side of the object, moving across, and disappearing on the other side. This series of pictures would provide indisputable proof that the object spins and has darker and brighter sides. It would also prove that the object is not a star, and that its distance from the Earth is not great.

Chapter 6
Binaries

A large numbers of luminous points that can be seen by a telescope or studied by spectrograph are actually double points (binaries), triplets, and quadruplets that are gravitationally bound together.

Studying the doubles (binaries), it was found that, in each case, one member of the pair was circling the other. Astronomers have also found that the period in which one goes around the other is different for each binary. Although the periods for some are in years, in many cases the period is only a few days or several hours, and in some cases less than an hour. For example, in the constellation of Cyg, one object V1644(29) orbits its companion in only 44.6 minutes. Conventional thought in astronomy seems to speculate that all objects in binaries or triplets are stars. Perusal of the literature does not seem to show any discussion of the possibility that many of them could be planets with satellites.

The fact that in many cases the period of orbit is very short – (i.e. a few hours or a few days), indicates that the objects are not as large as the sun, but rather, must be small - similar to that of planets or asteroids. If we study the solar system, we see that the orbital periods of satellites around their planets are much shorter than the orbital periods of planets around the sun. We also see that the distances between planets to their satellites are much smaller than the distances of the sun to its planets. If we study the planet Pluto and its satellite Chiron, we find that the period of revolution of Chiron around Pluto is short - only 6.4 days. Moreover, we find the radius of the orbit is small. The size of Chiron is half the size of Pluto, and for these reasons they are often referred to as a double planet.

Could a large object such as Jupiter orbit the sun in a few hours or days? Let us investigate the plausibility of this idea. Jupiter is a very large body, so large that 1,300 planets the size of Earth could fit inside it. Jupiter takes 11.8 years to complete its orbit around the sun. Given these facts, is the question not answered? Bear in mind that the distance between Jupiter and the sun is 11.8 times the distance between the earth and the sun. Imagine that the sun (which has a diameter 3.7 times the distance of the earth to the moon) could circle around another large star[24] in a few hours or a few days. The duration of the period is incompatible with the size of the objects, especially if we consider the great distance that should exist between them. Calculation shows that for such a large object to circle around another large object in a few hours, it must be moving with a speed of at least one-eighth the speed of light.

Astronomers studying binaries whose planes of orbit lay in the line of sight, found that orbital velocity can be determined. As the object circles its companion at positions moving towards or away from Earth, its light creates red or blue shift. This colour shift is called Doppler effect[25].

Astronomers studying the Doppler effect could determine orbital velocity precisely. They found that in a large majority of cases, orbital velocities of an object in a binary were much less than 50 km/sec. Having both orbital velocity and the period of orbit, one can easily calculate the size and radius of orbit. Having done this, astronomers were surprised by their size. Some were so small that the entire orbit could fit inside the sun. It follows that the size of the object itself must be as small as that of a planet or even smaller, the size of the satellites of planets.

Astronomers were puzzled by these findings. Their calculations led them to believe that an object had a mass many times that of the sun, whereas various studies including spectroscopic study using Doppler effect showed a volume up to a million times smaller than the sun. How could such an enormous mass be so tiny?

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[24] Astronomers believe that some of these stars are many times larger than the sun.

[25] Doppler effect: the apparent change in wavelength of sound or light caused by the motion of the source, observer or both. Waves emitted by a moving object as received by an observer will be blue shifted (compressed) if approaching, red shifted (elongated) if receding. How much the frequency changes depends on how fast the object is moving towards or away from the receiver.

Unfortunately, Parallax measurements were never suspected. Mass calculations were consequently far too large. Smaller distance gives smaller mass. The correct mass would have solved the problem. A small object, with a smaller mass, suggests that the object is either a planet or a satellite of a planet. On the other hand, an object with a mass as great as the sun, with a size a million times smaller, forced astronomers to conclude that a given object had many fantastic qualities. For example, a small coin at its surface would weigh tens of thousands of tons due to the great gravitational force. Other ideas generated by the need to explain how such a great mass could fit inside such small bodies include collapsed stars, neutron stars and black holes.

The short period of orbit and the Doppler effect show that the objects in question are small.

However, it must be noted that not all orbital periods of binaries are small. The orbital periods of some objects are so large that it takes years or even centuries to complete an orbit. This again does not mean both objects in a binary are stars. One could be a star as large as the sun with a large planet as a companion. In the solar system, the orbital period of Pluto around the sun is about 2.5 centuries and that of the Sedna is 10,000 years. We know that both Sedna and Pluto are not stars, but planets.

If we examine the reason that led astronomers to conclude that some binaries were made of stars, we would find again that calculations based on parallax measurements had yielded incorrect distances of many light-years, and since no planet can be seen from such great distance, false ideas about the size and nature of the objects have proliferated.

Chapter 7
Multiple Stars

Astronomers have discovered that two thirds of all the countless billions of points of light seen using a telescope have at least one object circling them. They have also discovered that some of the points of light have multiple objects circling them. Astronomers are convinced that, in all cases, stars are circling stars.

We know that many planets circle around the sun and that one or more satellites circle around the planets. Could it be that the companions of those stars are planets that have been mistaken for stars?

The reasons that lead to the speculation that these objects are stars and not planets are because of the belief that the distance to these objects was very great, making planets invisible through a telescope. Since these objects were visible from such great distances, it was supposed that they must be stars and not planets. Again, if we consider that the distances may be much smaller, the sizes may also be smaller, implying that they are planets, not stars. This, in turn, could explain why their periods of orbit are so short and why they are so faint.

Consider the famous star Castor (Alpha Geminorum). It was thought to be single until 1719, when James Bradley discovered a smaller, fainter object circling it. In 1896, the Russian astronomer A. Belopolsky, found that another object circled around the fainter and smaller object, with a period of about 3 days. Later, it was found that Castor had five companions. If we look at Castor and all the bodies circling it, we find that it resembles the solar system. Just as our sun has its planets that are smaller and fainter, similarly Castor has its planets that astronomers call ‘Castors’ companions’. Moreover, just as the planets in our solar system have satellites, similarly, Castors’ planets also have their own satellites.

It must be noted here that there is a common belief that the objects in a binary or a triplet circle one another. In other words, it is assumed that none of the objects are stationary in relation to the others (as our sun is to the planets in our solar system), rather, all objects are moving around each other. There does not seem to be much discussion of the possibility that one is stationary and the others are circling it.

If we take the example of Castor at the time that it was thought to have only one companion, it must have been very difficult to prove which body was circling the other. Since we know that Castor has five companions it is reasonable to assume that all five of them circle Castor, because they are much smaller and fainter than Castor. This is also why they were discovered later. Does not a star with smaller, fainter companions suggest a solar system like ours, with Castor being the sun and the others planets in orbits?

Chapter 8

The Size of Stars

In the previous chapter we saw why the measurement of the parallaxes and the distances to stars could be wrong.

An article published by the National Radio Astronomy Observatory gives an idea about the kinds of difficulties astronomers would have if they did not know the distance to an object.

> *It has been 35 years since astronomers discovered clouds of atomic hydrogen moving at peculiar velocities of hundreds of kilometre/ sec. through our galaxy. They still don't agree on an explanation for these "high-velocity clouds". The primary reason why high-velocity clouds are so poorly understood is that it is very difficult to determine distances to the clouds, so astronomer don't know their mass, linear diameters, or densities. Some astronomers have suggested that the clouds are relatively nearby, perhaps a few hundred ly* (light year) *away*[26]*, while others think that they are at distances of millions of ly from the galaxy.*[27]

There is great difference of opinion among astronomers regarding the distance to the clouds; some claim it is a hundred light-years; others say it is millions of light-years. It should not surprise us to consider the possibility that all of them are wrong, and that the actual distances are thousands of times smaller – in light days rather than hundreds or millions of light-years.

What happens if astronomers have the wrong idea about the distance to an object? The incorrect distance will lead them to faulty

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[26] *ly* = light-years.
[27] See website: "High-Velocity Clouds Press Release"
members.bellatlantic.net/~vze3fs8i/astro/hvcpr.html
National Radio Astronomy Observatory, News Release, January 9, 1998.
"New data about an old puzzle: Does star formation produce high velocity clouds?"

calculations of the size, mass, density, luminosity and nature of the object. The following are some examples of how an incorrect distance to an object can give astronomers fantastic and unrealistic ideas about the size and nature of the object.

By studying the orbit of binary objects, and using distances derived from parallaxes, scientists maintain that they have been able to calculate the mass of stars.[28] Using this technique, they believe that they have found the mass of the largest star to be 60 times the mass of the sun.

Simple physics tells us that a star with a mass 60 times the sun should have a volume about 60 times the sun. Nevertheless, astronomers believe that the diameters of some of the giants are hundreds of times larger than the sun. This means that the volumes of some of the giants are millions of times larger than the sun; a huge jump in scale! The densities that have been attributed to these stars are similarly unreasonable. For example, some astronomers claim that Betelgeuse has a diameter 600 times greater than that of the sun[29], while some others claim the diameter is 1500 times the sun[30]. An object with a diameter 600 times the sun means that its volume is 216,000,000 times larger than the sun. Notwithstanding, astronomers calculating the mass of Betelgeuse, by looking at its movement, claim that its mass is only 20 times[31] the mass of the sun[32]. Such a

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[28] Later it will be proven that the masses of many binary objects are incorrect and that actual masses are many times less. The reason for this error is that astronomers used incorrect parallaxes, which led them to believe that the distances to objects must be great. Furthermore, incorrect distance led to incorrect ideas about the distance between objects in a binary, which in turn led to incorrect calculations for the mass of these objects. In brief, erroneous parallaxes led to the belief that a planet is a star.

[29] Astronomers believe that Betelgeuse without its atmosphere has a diameter 600 to 1,500 times larger than the sun and that its atmosphere is many times larger than Betelgeuse itself. See Van Nostrand's Scientific Encyclopedia, Sixth Edition, p.342.

[30] Harvard – Smithsonian Centre for Astrophysics, (Observation 1995-1996), Press release, Cambridge, U.S.A

[31] According to National Radio Astronomy Obsevatory, Press release, VLA Observes Betelgeuse: the mass of the Betelgeuse is 10 times the mass of the sun.

large volume with such a mass gave astronomers the idea that the average density[33] of Betelgeuse is 0.000,000,1309 g/cm^3. This means that the average density of Betelgeuse is 9,874 times less than the density of the earth's atmosphere, at sea level. In other words, the space inside Betelgeuse is almost a vacuum.

To get an idea about the kind of vacuum it is, imagine a one-cubic meter container of air with the same density we breathe, and assume that somehow the four walls of that container have been stretched (see figure 1) to become nine thousand eight hundred seventy four meters long, with no additional air in that long 9.87 kilometre container. Imagine the kind of empty space created in that long container.

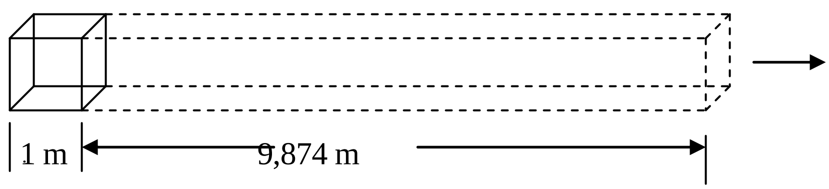

Fig. 1

To get an average density we assumed that all the mass is equally distributed in all the space inside the Betelgeuse. However, in reality most of the mass must be concentrated at the core of the star. Away from the core, most of the space inside the star would have a density much lower than what we calculated. .

Betelgeuse is red in colour and astronomers believe that it has a temperature thousands of degrees lower than the sun. A space with low temperature and near-vacuum density would be virtually transparent and would not likely show itself with a visible disc. The fact that the disc of Betelgeuse is so visible that astronomers can

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[32] According to calculation of astronomers the mass of the sun is 1.99×10^{33} grams and the volume of the sun is 1.407×10^{33} cm^3.
[33] Density is mass (grams) per volume (cm^3).

measure the diameter of its disc proves that most of the space inside Betelgeuse could not be in a state of near-vacuum.

Betelgeuse is not a unique or an isolated case. There is a general consensus between astronomers that in our Milky Way galaxy there are ten million stars similar to Betelgeuse.

There are many other examples that clearly show that astronomers' ideas about distance could be wrong.

Chapter 9
Novas are Planets, Not Stars

In previous chapters we saw that mass, periods, the Doppler effect, sizes and colours of some binaries contradict the results of relative parallax. In this chapter, we will examine how novas could also refute relative parallax.

An object that suddenly shows up as a luminous point of light displaying an increasing brilliance, and then later, becomes fainter or disappears over a period of time, is called a "nova". At first, astronomers believed novas to be new stars. Later, examining photographic records, they realized that novas were not new at all. Rather, they exist even before they are visible to observers on Earth, gradually becoming brighter as their light increases, before slowly becoming fainter and disappearing again. Another characteristic of a nova is that its light is always faint. Unlike novas, supernovas appear with luminosity many times greater than novas. In this chapter, we will examine only novas, excluding supernovas because of their different nature. Later on, we will study supernovas and why these stars create so much light.

Astronomers at first believed that a nova is a star that somehow explodes. Later, novas were thought to be transferring a huge mass of gas and dust into a companion star. The following is what generally is claimed about a nova:

> "*Evidence, now rapidly accumulating, indicates that the nova phenomenon is directly related to the existence of a very close double star system (eclipsing binaries), separated generally by little more than the diameter of a typical star. A popular theory concerning this phenomenon involves the transfer of mass from one star to the*

companion with the possibility that the exchange triggers an outburst on the companion.[34] ”

Since many novas show up regularly, some astronomers speculated that these objects periodically *undergo a small explosion*[35]. In this chapter, reasons will be given indicating that novas are not exploding stars at all but, rather, planets.

Let us examine some of the characteristics of novas and why they are planets and not stars. First of all, a nova's light is always faint. Secondly, its colour is always white-blue, similar to that of some planets and very different from the sun. Furthermore, the study of novas has shown that they always orbit a very small star of the type that astronomers call a "white dwarf"[36]. The following is a quote from a scientific encyclopaedia concerning novas. It states that a nova moves around a star, its orbital period is short, and its mass is low.

"Observations indicate that all novae are members of short-period, low-mass binary systems."[37]

Examining the above information, strong indications that a nova could be a planet whose light is a reflection from the light of the star it orbits can be discerned. Supposing that a nova's light is only a reflection of star light, it follows that nova light is not as bright as that of the star. This explains why their light is always faint. The reason a nova suddenly shows up is because it is orbiting a small star. As it moves around the star, it may suddenly reach a position where

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[34] *Cauldrons in the Cosmos* – Nuclear Astrophysics, Claus E. Rolfs and William S. Rodney, University of Chicago Press, Chicago, (1988), p. 20.

[35] The World Book Encyclopedia, v. 14, (1982), P. 431.

[36] According to astronomers a *white dwarf* is an example of a *collapsed star* such that its gravitational field forces it to collapse into a white dwarf. It has a very high density and small size. See: Asimov Isaac, *The Exploding Suns*, Truman Talley Books, (1985), p.62-63.

[37] Van Nostrand's Scientific Encyclopedia, Sixth Edition, Van Nostrand Reinold Company, (1983), p.1994.

it reflects the light of the star in our direction. As a result, it becomes visible.

The above quotation contains additional information that further confirms that novas must be planets and not stars. The fact that these objects have a short period of orbit indicates that they are small and orbit another small object which astronomers call a white dwarf. Secondly, in the above quote, one finds that novas have low mass, comparable with that of planets or satellites, and not stars. Finally, some strong arguments supporting the theory that novas are planets is that some of them show up regularly and that their light changes periodically.

To conceptualise this, imagine a planet circling a star. In this case, the light that comes from the planet is the reflection of the light of the star, just as the light of the moon is the reflection of the light of the sun. Similarly, the light of novas changes periodically. In the case of the moon we can easily see and distinguish the reflection as a crescent or as a full moon, but with a nova, due to its remoteness, we only see it as a point of light and we cannot distinguish between its appearance as a crescent or a full circle. Since the appearance of a crescent from a long distance is not very clear, some have interpreted the phenomenon as a transfer of mass from one member to another.

All the above characteristics indicate that novas are not stars, but planets. Astronomers have thought them to be stars because they believed them to be hundreds, or even millions, of light-years away, in which case only stars could be visible. A planet from such a long distance could not possibly be visible unless it were millions of times larger than the sun.

With these proofs, to consider that the distance from Earth to novas and other celestial objects is really much smaller than popularly believed makes more sense.

Chapter 10

Quasars

Astronomers have found objects similar to the sun, which they believe are billions of light years away. Astronomers called these objects quasars. They also believe that these objects produce 1,000,000,000,000 times more energy than the sun. However, astronomers admit that there are some serious problems with these ideas. In order to get an idea about the problems the following is a quote from an astronomy textbook.

> *The immediate problem that astronomers recognized with quasars was explaining their enormous energy output. What makes the problem even more difficult is the fact that the energy has to be generated in a small volume. One way out of the problem is to say that quasars are not as far away as we think they are.*[38]

In the chapter about the Milky Way it will become clear that quasars are stars that are similar to our sun and that they are not as far away as astronomers think they are.

Wrong idea about parallaxes have given astronomers incorrect object distance and this, in turn, has led to a series of faulty calculations about mass, size, luminosity and the nature of the objects. A simple calculation shows that if distance were much smaller, these problems would disappear.

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[38] Kutner Marc L., *Astronomy A Physical Perspective*, John Wiley & Sons, (1987), p. 434.

Chapter 11
Galaxies are Planetary Systems

The current understanding among astronomers is that a galaxy is a large star system containing hundreds of billions of stars. It is also maintained that some galaxies visible by telescope are billions of light-years away, and that their diameters can be hundreds of thousands of light-years across. The sun is also thought to be one of billions of stars belonging to a galaxy called the Milky Way, with a diameter of about 100,000 light-years. It is further asserted that the plane of the Milky Way that appears to the naked eye as clouds, contains hundreds of billions of stars.

We have been taught to think of a galaxy as a conglomeration of hundreds of billions of stars. Since we have been conditioned to think that way, it is very difficult to see it differently. It is hoped that the evidence presented in this chapter will compel a change of view.

So far, the evidence presented about star distance has not shown the whole picture. The next few chapters, particularly Chapter 13 “The Milky Way”, present all the different reasons as pieces of a puzzle put together, showing a picture that is clear, simple and irrefutable. At first a series of images of galaxies will be presented that need to be looked at closely, and with a new frame of mind. Along with the images, reasons and evidence will be presented that not only disproves the distances that are attributed to galaxies, but also disproves their sizes and nature.

Astronomers estimate that there are at least one million comets circling the sun in our solar system. (“…*comets in the Solar System number many millions.”* [39]*)* This gives us an idea of how many billions of asteroids and the clouds of dust and gas that must be circling the sun. Imagine what the solar system would look like from far away? It would appear exactly as a galaxy. If we could take a picture, we would probably have an image similar to the ones shown here of distant galaxies (see figures 1, 2, 3, 4).

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[39] Encyclopedia of Astronomy, Homlyn Publishing Group, (1979). p. 101.

Fig. 1 NGC 5746, Edge on spiral galaxy. Credit: Robert Gendler

NGC 2683, Spiral Galaxy in Lynx. Credit: Robert Gendler
Fig. 2

Photograph of Sunset Sunset

Please note how similar the centre of the galaxy is to the sun.

M88, Spiral Galaxy in Coma Berenices. Credit Robert Gendler

Fig. 3

Fig. 4

M63, Spiral Galaxy in Canes Venatici. Credit: Robert Gendler

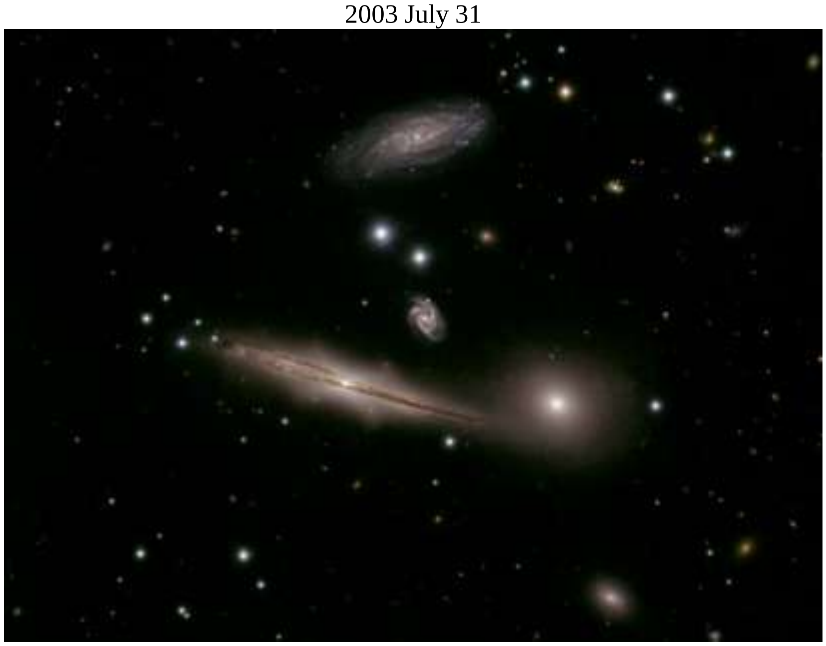
Fig. 4

M99, Spiral Galaxy in Coma Berenices. Credit Robert Gendler

Fig. 5

The understanding that galaxies are planetary systems similar to the sun explains why in space we see many other planetary systems highly similar in overall appearance to that of our solar system (see figures 6, 7).

2003 July 31



Galaxy Group HCG 87 Credit: GMOS-S Commissioning Team, Gemini Observatory

Fig. 6

Figure 6 shows several galaxies, each seen from a different perspective.

Credit: FORSI, 8.2-Meter VLT, ESO
“A Peculiar Cluster of Galaxies”
Fig. 7

Astronomers view galaxies as star systems that are hundreds of thousands of light-years wide and millions of light-years away. Is it possible that they could be planetary systems instead, which are not as large nor so far away?

Let us investigate. To do so, a number of related possibilities will be examined in detail in the following pages. First it will be reasoned that galaxies visible by the most powerful telescopes are not millions or billions of light-years away, but are less than a few thousand light-years distant. Secondly, the centre of a galaxy is not made up of millions of stars, but rather, is made of only one star. Thirdly, around the centre of a galaxy there are less than a few hundred planets, and not billions of stars. Fourthly, the clouds that we see in a galaxy are not aggregates of billions of stars, but rather, they are asteroids, rocks, and minerals, some in the form of dust and gas. These new interpretations will then be applied to our Milky Way galaxy. It could be reasoned that the centre of the Milky Way galaxy may not consist of millions of stars, but rather of a single, massive star: our sun. Furthermore, almost all of the alleged ‘stars’ in the plane of the Milky Way are either planets or asteroids, that have been mistaken for stars; the light of the Milky Way is only the reflection of the light of the sun. And finally, the diameter of the Milky Way is not a hundred thousand light-years wide, but rather, it is less than 30 light-days.

Astronomers agree that by using large telescopes, they have been able to resolve individual stars and study them. For example, with a 60-inch telescope, the individual stars belonging to the nearest galaxy, M31 (also called Andromeda galaxy), are clearly identifiable, some as *Cepheid variables*. Astronomers believe that the sun, at a distance of 32 light-years[40], appears as a star of fifth magnitude.[41] In other words, the sun appears 2.512 times brighter than a star that is barely visible to the naked eye. This means that the sun from a distance greater than 50.71 light-years would not be visible to the naked eye.[42] In the Chapter 1 we saw that looking through a large telescope such as the Hubble we can see 357 times farther away than the naked eye sees. Therefore, the greatest distance that the Hubble enables us to see a great star[43], such as the sun, is 18,110 light years. Likewise, it is not possible for any star in the Andromeda galaxy to be visible from a distance of 2.4 million light-years away. Rather, the distance must be tens of thousand of times less.

This understanding is supported by the fact that in 1907 the Andromeda galaxy was determined to be only 19 light-years away. Later, Dutch-American astronomer Adriaan Van Maanen, who was

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[40]George O. Abell, *The Realm of Science* , Touchstone Publishing Company, (1972), v. 11, p. 31. See also Asimov Isaac *The exploding Suns*, Truman Talley Books, (1985), p.45.

[41] Magnitude is a scale used since ancient times to compare the brightness of one star to another.

[42] The inverse square law gives us a distance of 32 x 1.58 = 50.71 light-years at which the sun would be barely visible to the naked eye. This means that at a greater distance 50.71 light years the sun would not be visible to the naked eye.

[43] In the Chapter 12 about the Milky Way it will be proven that the sun is a very large star and that it is the center of the Milky Way galaxy.

the leading expert in the field of astrometry (the precise measurement of stellar position and motion) also measured the parallax of the Andromeda galaxy and found it to be 0.004 ± 0.005" which placed it at a distance of 815 light-years.[44] These findings suggest that the Andromeda galaxy is not only nearby, but small. Further confirmation came when Van Maanen, by using a very large 152 – centimetre plate, found distinctive changes indicative of the rotation of the galaxy against the background of a field of stars, confirming that the galaxy must be small and nearby. However, by mistaking novas and Cepheid that are actually planets to be stars, a few changed the course of astronomy. Arguing that the discovery of a few dozen novas or Cepheids in the Andromeda galaxy, in a few months, proved that the galaxy is very large, consisting of billions of stars and that its distance is in millions of light-years[45]. On the contrary, the existence of a nova should be taken as evidence that a galaxy is a planetary system. The discovery of a Cepheid variable is evidence that the objects are spinning and that they are not stars, but rather, planets reflecting light.

The Centre of a Galaxy has Only One Star Instead of Millions of Stars.

The following is a photograph of a galaxy taken many years ago that for decades it was considered to be a very clear and excellent image of a galaxy.

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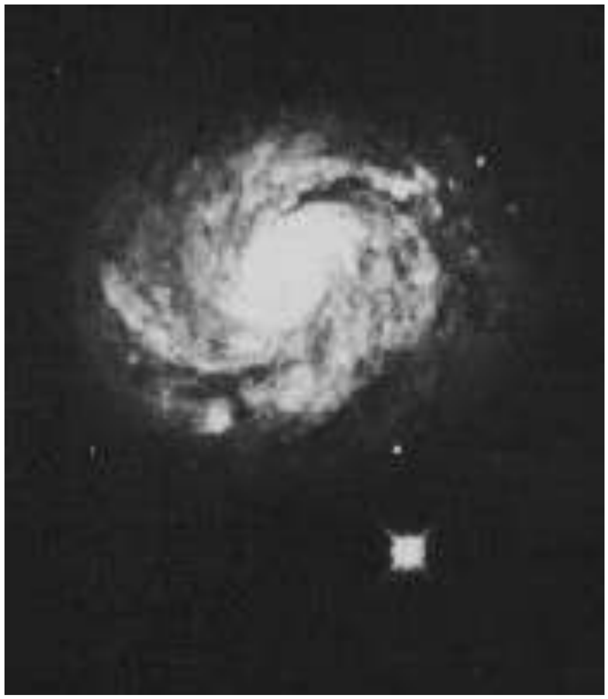
[44] Adrian Van Maanen and the Rotation of the Spiral Nebulae.
[45] Asimov Isaac, The Exploding Suns, Truman Talley Books, (1985), p. 84 - 94.


An old photograph of a galaxy

Based on this kind of evidence astronomers speculated that the centre of a galaxy is made of millions of stars.
All the evidence not only negates this idea, but points to the fact that there must be only one star in the centre of a galaxy. In this section and the next, we will study galaxies, including the Milky Way, and evidence will be presented so that the reader can judge for him- or herself.

Examining the image of any galaxy, one can see that at its centre there exists only one bright and yellowish object that makes up the centre of the galaxy. One can also see that all the bluish or whitish objects in the spiral arms are circling that yellowish centre.

In 1924, Edwin Hubble, using a 100-inch telescope on Mount Wilson, successfully resolved the spiral arms of the Andromeda Galaxy into many stars. He detected many objects such as Cepheid variables and blue supergiants. However, when he tried to resolve its centre into stars, he realized he could not.[46]

Since that time, many have attempted to resolve the centres of galaxies into stars and all have failed. Could it be that the reason for their failure was that the centre of a galaxy is not made of many stars, but rather, is made of only one star? There have been vast quantities of photographs of galaxies taken in which individual stars can be easily seen in the spiral arms of the galaxy. No photograph shows a centre full of stars.

Some might claim that the reason astronomers cannot resolve the centre of a galaxy into stars is because the hundreds of millions of stars that make up the centre of a galaxy may be so closely compacted together that from a distance it is impossible to see them individually. The following reasons disprove this idea.

Astronomers claim that the centre of a galaxy is made of millions of stars but at the same time, they contend that the small and bluish objects circling the centre are stars. If we compare the size of the centre to the size of each of those bluish objects, we see that the size of the centre is only a few times larger. If astronomers were correct and the centre of galaxies were made of hundreds of million of stars, then the centre should have been billions of times larger than any of those stars that are circling the centre. In other words, if the centre of a galaxy were made of millions of stars, the total volumes that those stars occupy, plus the spaces that should separate them, all combined would create a volume hundreds of billions of times larger than that of a single star.

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[46] Croswell Ken, *The Alchemy of the Heavens*, Anchor Books, (1995), p. 65.

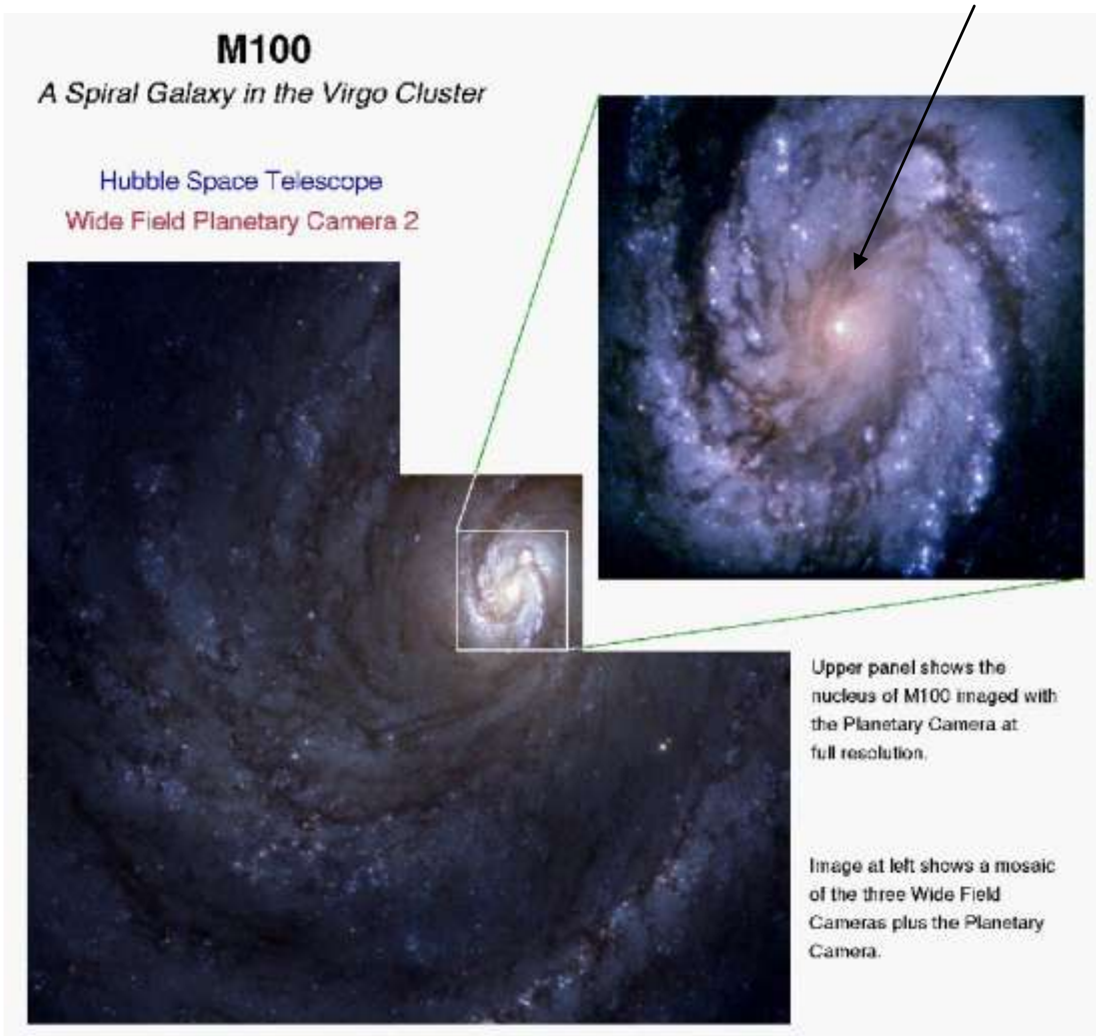
On the contrary, the diameter of the centre compared to any of the bluish objects circling the centre is only several times larger. This clearly disproves the idea that the centre of a galaxy is made of hundreds of millions of stars, unless we assume that the each of the bluish objects are made up of millions of stars or each millions of times larger than the sun. However, this is not the case because astronomers, using large telescopes, have been able to resolve and study each of those bluish objects individually. Moreover, by using spectroscopic instruments, they were able to determine which ones are members of binaries and even to determine the velocities, periods of orbit of some around the others and their mass. The fact that the relative diameter of a centre of a galaxy is not much different from the bluish objects that circle the centre proves beyond a shadow of a doubt that the centre of a galaxy could not possibly be a conglomeration of millions of stars.

The following clear images of galaxies are some of the best that astronomers have been able to take. There is an old proverb that says: ‘A picture is worth a thousand words’. Bear in mind that when looking at the photos of galaxies, you can see details that you would not be able to see if you looked directly through the eyepiece of a telescope. In order to take a picture, one has to focus the light of the image on the film for a long duration of time. For this reason, the impression left on the film is far greater than the impression your eye receives.

M61, Spiral Galaxy in Virgo
Image Acquisition by Jim Mist, Image processing by Robert Gendler.
The photograph shows that the centre of the galaxy is made of one star rather than millions.

Fig. 8

The following images taken with the Hubble telescope provide additional evidence that the centre of a galaxy is made of one star. There is something special about the image because it shows the central core of the galaxy M100. The image on the left (see figure 9) shows the galaxy as a whole. The small square in the middle shows the area that has been enlarged by the telescope and presented in the next image shown on the right. This enlarged image taken by the Hubble telescope shows that the nucleus of the galaxy is a yellowish star similar to the sun. The smaller objects that have blue colours are circling that centre. This image is evidence that shows there is no such a thing as “hundreds of millions of stars” in the core but that there is, rather, only one star.



The small section of the galaxy inside the square was magnified by the Hubble telescope and is shown on the right. The image on the right shows the nucleus of the galaxy (the yellowish object indicated by the arrow) is made of one star. *This image was taken by the Hubble space telescope. Credit: NASA, STScI*

Fig. 9

The galaxy NGC3310
Image Credit: NASA and The Hubble Heritage Team (STScI/AURA)
Fig. 10

M101, Spiral Galaxy in Ursa Major
Credit Robert Gendler
Fig.11

M88, Spiral Galaxy in Coma Berenices. Credit: Robert Gendler

Fig. 12

The image of the galaxy 101

Fig. 13

Fig.14

NGC 3953, Spiral Galaxy in Ursa Major Credit: Robert Gendler

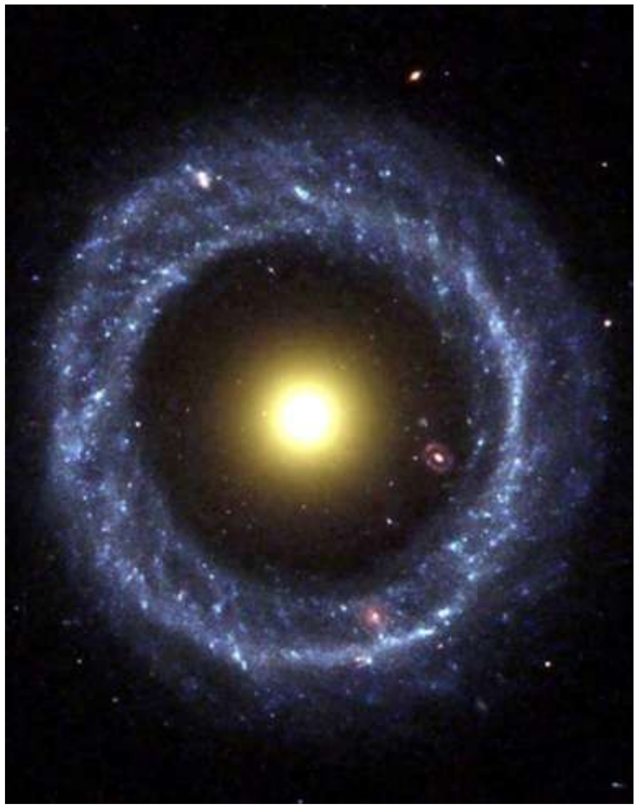
Fig. 15

The Colour of the Centre of a Galaxy is Similar to that of the Sun

If we study the true colour photographs of all galaxies, we see that the centre has a yellow colour similar to that of the sun. Jay M. Pasachoff writes

> "*Color photographs of galaxies show that the central regions are relatively yellow, indicating that older stars are dominant there, while the arms are relatively blue and therefore contain relatively young stars*".[47]

[47] Pasachoff Jay M., *A Field Guide to the Stars And Planets*, Fourth Edition, Houghton Mifflin Company, (2000), p. 172.



Hoag's Object: Galaxy
Credit: R. Lucas (STScI/ AURA), Hubble Heritage Team, NASA.
The above photograph shows the true colour of a galaxy.
Astronomers claim that this galaxy is 100,000 light years wide and that it is located 600 million light years away from us.

Fig. 16

The fact that the centres of galaxies have a yellowish colour suggests that these centres may be similar to the sun.

The Centre Illuminates a Very Large Part of the Galaxy

Astronomers suggest that a galaxy is made of hundreds of billions of stars, and the centre is, at most one hundred million stars. If we look at some galaxies, we find the light of the centre illuminates the entire galaxy. If we consider that the centre of a galaxy may be one star, it follows that the centre illuminates the clouds and planets circling it. If we assume that the centre is made of millions of stars, and also assume that hundreds of billions of stars are circling the centre, then the light of the centre would be dim compared to the light of the stars circling it. This is simply because there would be far more stars circling than the number of stars making up the centre. This point is all the more poignant since astronomers also believe that the objects circling the centre are very hot stars, because they are blue[48].

Many astronomers were in fact puzzled to find that the light of the centre of a galaxy was much brighter than the rest of the galaxy (see figure 14). For example, on September 12, 1997, Dr. Philippe Crane and his team at the European Southern Observatory in Garching, Germany, announced that using the Hubble Space Telescope, they had realized that the nucleus of the NGC6251 galaxy is shining so brightly that its light illuminated the central region of the galaxy. They wrote,

> *" Something is lighting up the centre of galaxy NGC 6251,…The strange beast that rules the centres of galaxies: a bright central object is illuminating a surrounding material disk.*"[49]

What is this "…*strange beast that rules*…"? The author contends that it is a single star, around which circle planets, asteroids and clouds.

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[48] Pasachoff Jay M., *A Field Guide to the Stars And Planets*, Fourth Edition, Houghton Mifflin Company, (2000), p. 172.

[49] September 10, 1997, issue of the Astrophysical Journal Letters. Dr. Philippe Crane of the European Southern Observatory, in Garching, Germany. See also, NASA's Hubble Space Telescope, Sept. 12, 1997.

M64 Sleeping Beauty Galaxy
Credit: NASA and the Hubble Heritage Team (AURA/ STScI), S. Smatt (IoA) & D. Richstone (U. Michigan) et al.

Fig. 17

Furthermore, astronomers realized that results of some studies do not support some theories on galaxy components.

> *"It has been found that the ultraviolet wavelength region is the most appropriate for studying many galaxies. Galaxies are known to be made up of millions of stars. However, some galaxies harbour in their nucleus objects that emit more energy than all the stars in the rest of galaxy together. Very little is known about those objects at present. Observations in the ultraviolet wavelength indicate that such objects are rather small and the fact that they generate such enormous quantities of energy puzzles astronomers. These objects are some of the strangest phenomena observed to date in the universe …."* [50]

[50] "Ultraviolet" Gosmolo – G Interactive, 2000

The understanding that galaxies are not as far away as previously thought, and that a galaxy is made up of one star and the rest of the galaxy are planets, asteroids and clouds, solves series of problems.

NGC 4216, Galaxy in Virgo Credit: Robert Gendler

Fig. 18

Note similarity of the centre of this system to that of the sun, and how it illuminates the surrounding clouds.

or file://A:\ultraviolet_astronomy.htm

Credit: Robert Gendler **Fig. 19**

NGC 5746 Galaxy in Virgo Credit: Robert Gendler

Note similarity of the centre to that of the sun.

Fig. 19

The Centre of a Galaxy is a Significant Source of Heat Radiation

In the solar system the sun is the most significant source of heat (infrared) radiation.

If the centre of a galaxy is made of one star and all objects circling the centre are planets, then its centre in comparison to the objects circling it must be a strong source of heat (infrared) radiation. This is exactly what astronomers have found.

> *"With increasing refinement in infrared astronomy, some unexpected findings have surfaced. For example, it has been found that the nuclei of galaxies emit large amounts of infrared energy. The sources which power this radiation are poorly understood."* [51]

The next image of the NGC1365 galaxy taken in infrared light further illustrates that the centre is made of one star and that it is the source of heat (infrared energy). Its infrared light also shows that the objects circling the centre are not hot at all and therefore must be planets.

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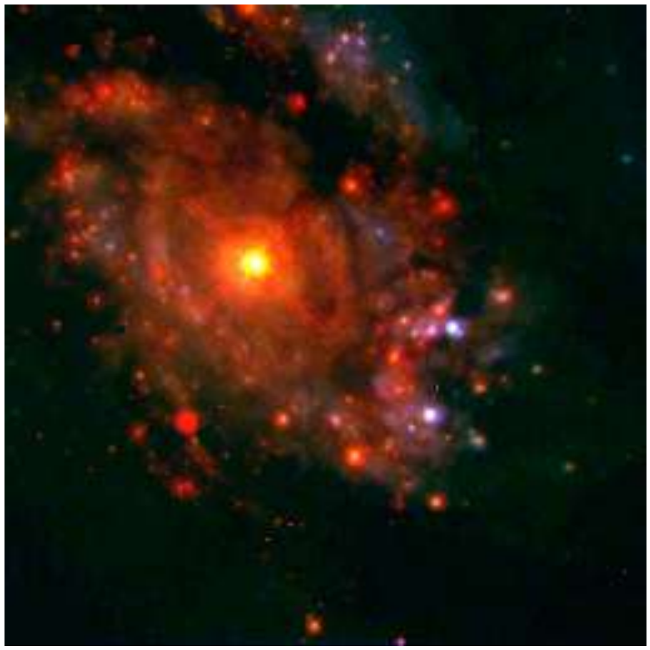
[51] *Van Nostrand's Scientific Encyclopedia,* Sixth Edition, Van Nostrand Reinhold Company, (1986), P. 1606

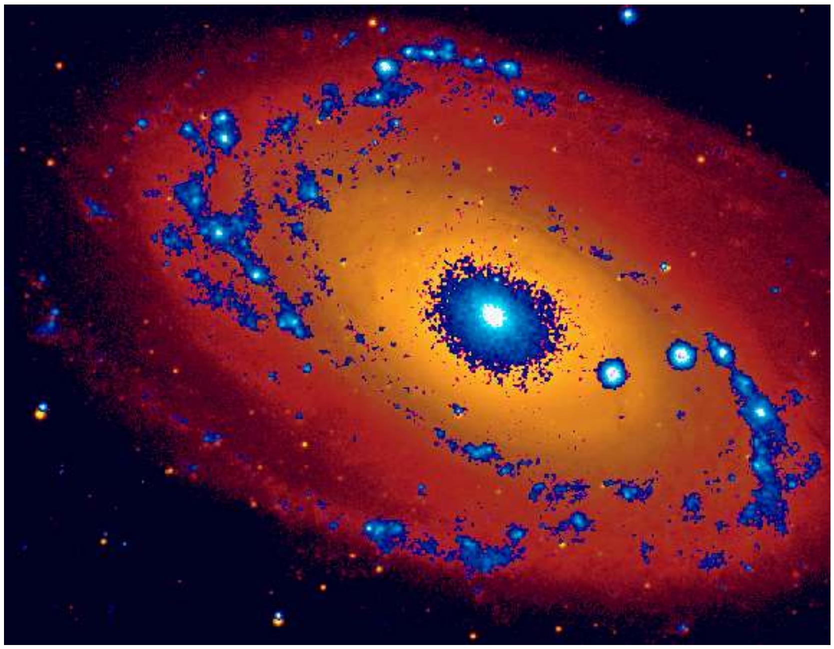


NGC1365: Barred Spiral Galaxy image in infrared light.
The image of the galaxy taken in infrared light shows that the star at the centre is a strong source of heat energy while the objects circling the centre are not hot at all.
Credit: NASA, ESA, and Marcella Carollo (Johns Hopkins University and Columbia University), NASA, ESA. **Fig. 20**

Planets, Not Billions of Stars

It is a common astronomical belief that the objects circling the centre of a galaxy are stars. The following photographs and explanations offer compelling evidence that they are actually planets.

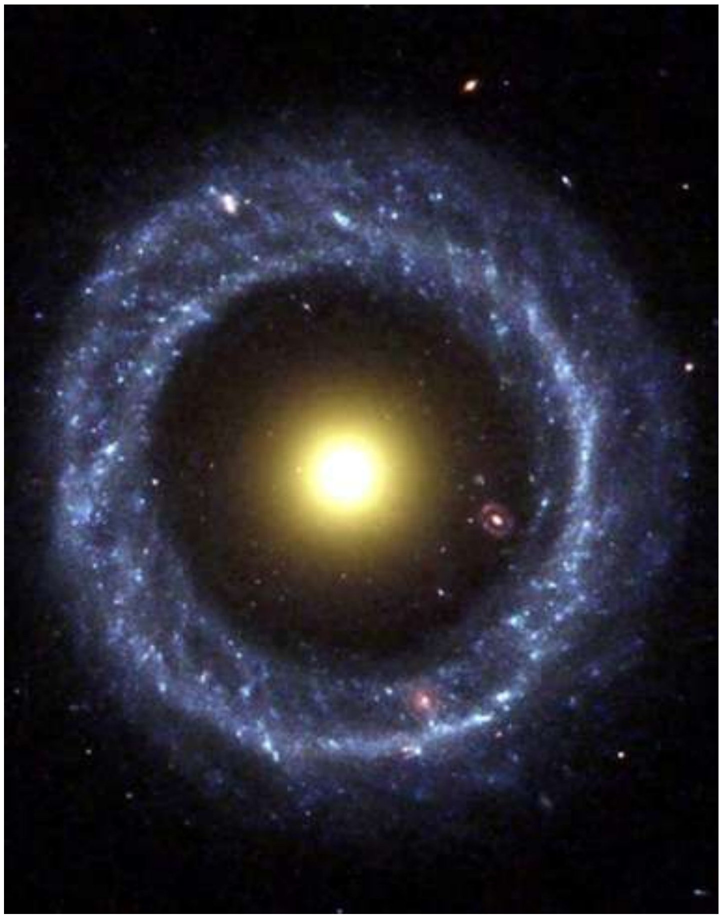
There is a general consensus among astronomers that galaxies contain billions of stars. If we examine recent images with excellent resolution, it is easy to count the number of spherical and luminous objects within the galaxies. In most galaxies there are less than a few thousand. In fact, in the large majority of galaxies, there are less than several dozen. Despite this, some persist in the old belief that spiral clouds in a galaxy are aggregates of billions of stars, appearing as clouds from a distance.



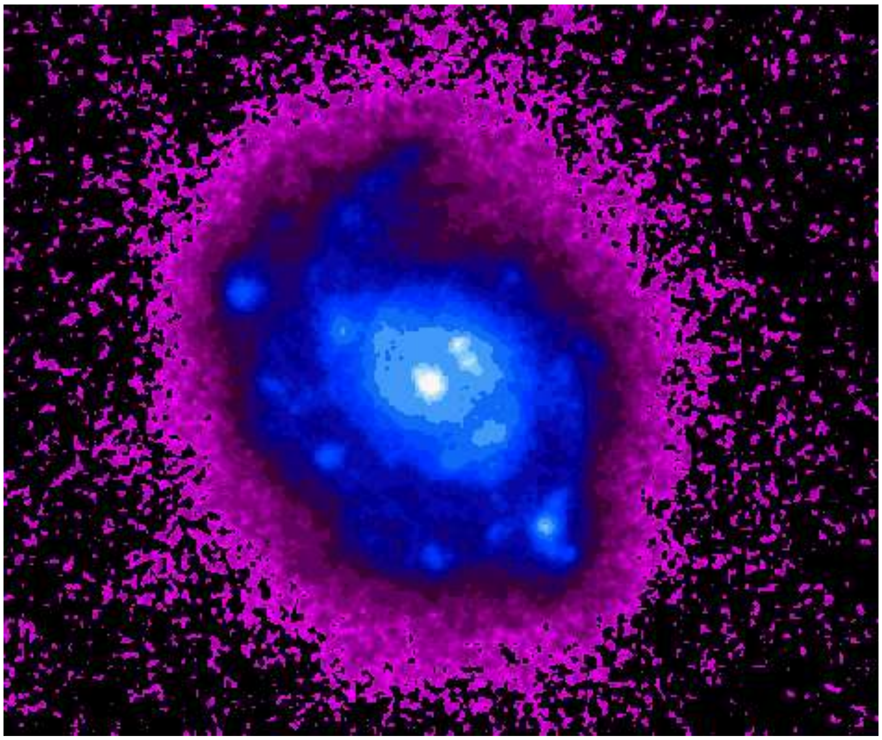
M81: A Bulging Spiral Galaxy photographed in ultraviolet light. Credit: NASA UIT.

July 13, 1996 **Fig. 21**

The photograph of M88 taken in ultraviolet light distinguishes the planets from the clouds. It shows, not billions, but only a few hundred planets within the clouds.

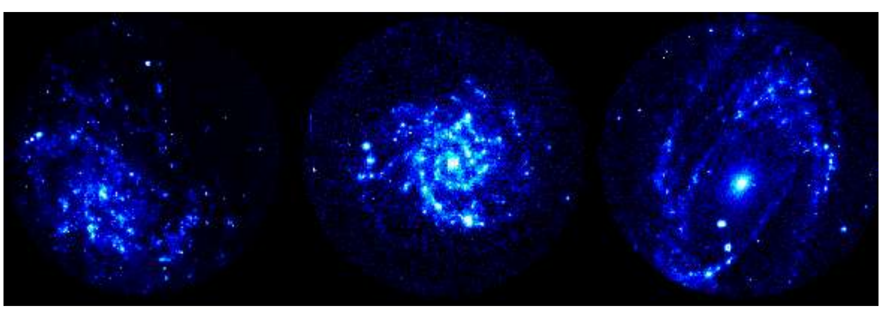


The photograph suggests that the objects circling around the central star are planets and not stars. The Milky Way galaxy may have a configuration similar to the galaxy shown here. **Fig. 22**



The image shows the spiral galaxy M77, taken in ultraviolet light, shows a star in the centre with about a dozen planets around it. *Credit: UIT, NASA.*

Fig. 23



April 9, 1996 **Fig. 24**

The images show three spiral galaxies: on the left, M33; the middle, M74; and on the right, M81. The photographs were taken in ultraviolet light. Notice the size of the centre stars relative to their planets around them. There does not seem to be a big difference in size – perhaps several times, at most.   Credit: NASA, UIT.

M61, Spiral Galaxy in Virgo
Image Acquisition by Jim Mist, Image processing by Robert Gendler.
Fig. 25

Examining the images of galaxies, one can observe that the colours repeat. The centres are yellow-white, while the objects that circle the centre are blue-white.

Despite all of this, some have interpreted the blue or white colours as indications of a very high temperature, with yellow considered to be cooler than the blue and white. If this were true, the centre of a galaxy, being yellow-white, would be cooler than its orbiting stars. How could the centre be less hot than the objects around it? Some astronomers assert that hundreds of billions of stars circle the centre of a galaxy. How could they be illuminated by a 'centre' made up of a fewer, cooler stars? How could a centre that illuminates the entire galaxy be less hot than the objects that are faint and circling around it? Moreover, if the objects circling the centre of the galaxies are hot stars, then they should illuminate the clouds surrounding them.

The photographs tell another story. None of the blue objects in the photographs illuminate their surrounding clouds. Furthermore, the light of the blue and white objects is faint and dull. How could they be stars?

In our solar system, the sun is a strong source of heat energy, x-rays and gamma rays, while the planets are not. If the objects in a galaxy are planets circling a single star, the same should hold true. This is exactly what infrared and x-ray images of galaxies show. They confirm that the centres of galaxies are strong sources of infrared and x-rays, while the objects circling the centres are not.

Fig. 26

Aside from examining photos, a further indication suggesting that objects circling the centre of the galaxies are planets is that the light of these objects undergoes different phases, similar to those of our moon. We know that the planets in our solar system reflect the light of our sun. When the illuminated section of a planet faces us, as that of a full moon, it will give its maximum light. As it rotates, its light gradually becomes minimal. Astronomers' observations have found this exact phenomenon in many galaxies such as Andromeda.

The Plane of the Orbits of the Planets

Looking at the photographs of a galaxy, one can see that around the nucleus, the planets are somewhat located in one plane, just as all the planets in the solar system are somewhat located in one plane. In the next chapter series photographs will be presented to show that the centre of galaxies are spinning.

The same reasoning that applies to the flat plane of the solar system, or even to the rings around the planet Saturn, also would apply to the galaxies. In the solar system, the sun's spin puts the planets in almost one plane[52], almost perpendicular to the axis of the spin of the sun. If we assume that the centre of a galaxy is made of millions of stars, then that centre must also be spinning on an axis. If so, then what force arranges and keeps all these stars together in a sphere and makes them orbit? Why has the spin of the centre not rearranged the stars into a flat plane? Why is the shape of the centre of a galaxy spherical and not flat?

Unsolvable questions such as these, plus the questions related to the size and gravitational forces at work in the centres of many galaxies, gave rise to the idea that there must be a black hole at the centre of a galaxy. The author believes that black holes do not exist and are nothing more than a myth. Astronomers admit that so far not one single piece of evidence has been found to support the existence of a black hole. On the other hand, if galaxies are small and anchored by one star at the centre rather than by billions of stars, all of the questions would be answered without having to postulate the presence of black holes.

The Detection of the Rotation of the Galaxies

If galaxies are actually planetary systems, then some of the visible galaxies must be very close to the Earth and have relatively

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[52] Bahram Katirai - *Revolution in Physics*, Noor Publishing Company, (1997), p. 137.

small dimensions. In this case, we should be able to detect the orbital motion of the planets in these galaxies. In other words, the galaxies as a whole must be rotating, and the rotation must be detectable.

Was such rotation ever discovered? The answer is yes. In 1899, a Welsh astronomer, Isaac Roberts, discovered that the Andromeda galaxy was rotating.[53] The detection of the rotation of the galaxy within a relatively short period of time proves that the galaxy is relatively small. If the galaxy were as huge as some have claimed, it would take hundreds of millions of years to make one rotation and it would be impossible for the photographs to show its rotation in such a relatively short period of time.

Later, the reputable astronomer, Adrian van Maanen also announced that he detected the rotation of several galaxies[54] and confirmed Roberts' findings[55]. Enter Joel Stebbins, who had studied the spectroscopic data on several spirals (including Andromeda), and came to the same conclusion that they were indeed rotating.[56] In 1909, an English astronomer, William Huggins, announced that his studies showed that the Andromeda nebula was a planetary system[57], similar to our solar system.[58] Unfortunately, some prominent astronomers brushed aside these findings, because it did not fit their notion of the sizes and distances of the galaxies. They claimed that the detection of the rotation was impossible, because the detection of the rotation of such large bodies would require rotational velocities far in excess of the speed of light.

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[53] Asimov Isaac, "The Exploding Suns" Truman Talley Books. E. P. Dutton Inc, (1985), p. 84.

[54] Whitney Charles A., *The Discovery of our Galaxy*, Alfred A. Knopf, (1971), p.214.

[55] Asimov Isaac, "The Exploding Suns",Truman Tally Books, E. P. Dutton, INC., (1985), p. 90.

[56] Berendzen, R., Hart, R., Seeley, D. , *Man Discovers the Galaxies*, Science History Publication, (1976).

[57] Asimov Isaac, "The Exploding Suns", Truman Talley Books, (1985), p. 84.

[58]At the time, it was thought that billions of these planetary systems, including our solar system, belonged to the Milky Way galaxy.

Since the prominent astronomers could not tolerate a conflict with their ideas about the distances and sizes of the galaxies, one by one they rejected various findings by Roberts, Maanen and others.

Furthermore, if we study our sun, we find that its spin creates solar wind.[59] This wind is expanding, as a spiral, away from the sun in a plane that is in line with the orbital path of the planets.[60] The velocity of the solar wind near the earth has been measured and found to be about 500 km/sec. We also find that the spiral configuration of the solar wind is exactly similar to that of the spiral galaxies. Using NASA's Hubble telescope in 1994, Dr. Holland Ford measured the rotation of the gas near the centre of the galaxy M87, located in the constellation of Virgo. By measuring the red and blue shift "Doppler effect", of the moving gas, he found that the gas circled the centre with a velocity of 500 km/sec,[61] similar to our sun.[62] Dr. Ford's findings support our thesis.

Another example of support for this idea came in early 2003. In that same year, some observers announced that they had detected a high-speed wind created by the spin of the nucleus of galaxies.[63] In spite of this, some astronomers not only continue to contend that the nucleus of a galaxy is made of millions of stars, but also that there is a black hole in the nucleus, and that for unknown reasons, the wind is created by the black hole. They have not considered the possibility that the centre is made of one star and the wind is created by the

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[59] For further information see Katirai Bahram, *Revolution in Physics*, Nur Publishing Company, (1997), p. 137.

[60] The general belief is that the wind comes from the sun itself, however, the author believes that the solar wind is created by the spin of the sun in the space filled with ethereal matter. For more information see: Bahram Katirai *Revolution in Physics, Nur Publishing Company, p.1.*

[61] See Nasa Hubble Telescope, Public release, 1994.

[62] The velocity of the solar wind near the earth has been found to be about 500 km/sec.

[63] In an article entitled " The Give and Take of Black Holes", by Dr. David Whitehouse. The Science Editor, January 10, 2003, (BBC News On line), Science/Nature.

star's spin. Just as the sun's spin creates solar wind[64], similarly, the spin of a star at the centre of a galaxy also creates wind, both at 500 km/sec..

The Existence of a Large Number of Galaxies

If we assume that galaxies are star systems, then in space the number of galaxies, should be extremely small, in relation to the individual stars that do not belong to galaxies. On the other hand, if we assume that a galaxy is actually a planetary system that has only one star at its centre similar to that of the solar system, then in space we should be able to see a very large number of galaxies. In other words, since a large percentage of stars should have many planets, then in space we should find a large number of planetary systems. That is exactly why in space we find a very great number of planetary systems (galaxies). Fred Hoyle, states:

> *"The galaxies apparently stretch away into space without end. Within the range of the largest telescopes, there are about a thousand million of them . . . the general distribution of galaxies have large-scale homogeneity"*[65]

In some parts of space, for example, in the constellation Hercules, there appear to be more galaxies than individual stars. The following are some old and new photographs taken by NASA astronomers that show more galaxies than stars.

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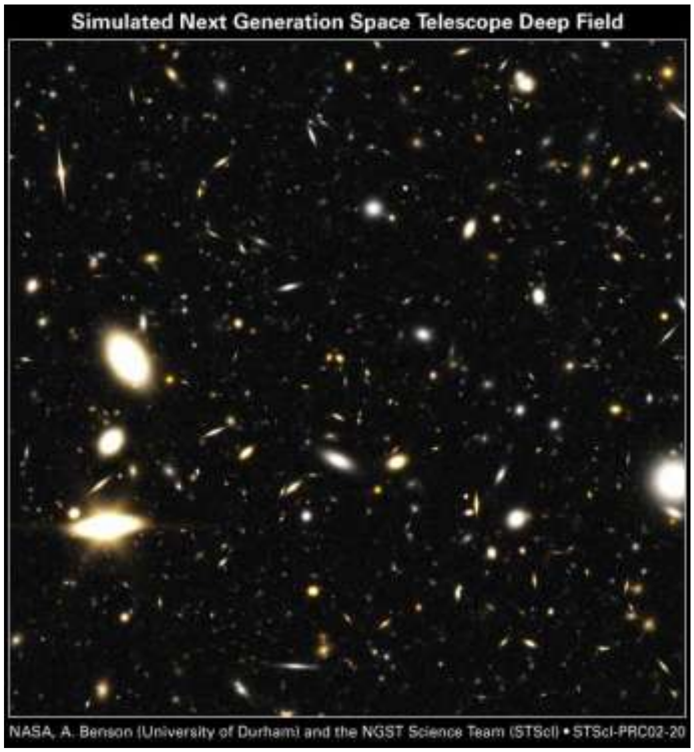
[64] For a detailed discussion of the subject, see the author's website; www.look look.ca

[65] Fred Hoyle *Astronomy*, Crescent Books, Inc. p. 292.



Astronomers suggest that most of the objects in this photo are galaxies made of billions of stars. In contrast, the author suggests that most of these objects are planetary systems. **Fig. 28**

Credit: NASA, N. Benitez, H. Ford (JHU), T. Broadhurst (THE Hebrew University), M. Clampin and G. Hartig (STScI), G. Illingworth (UCO/LICK Observatory), The ASC Science Team and ESA.

Fig. 29

Fig 30

Some astronomers believe that the number of individual stars in relation to the galaxies is three to one. The idea that the number of so-called galaxies in relation to the stars is three to one indicates that the galaxies could actually be planetary systems.

We know that there exist stars with only a few planets revolving around them. It follows that there must also exist massive stars that have a very large number of planets, and asteroids with a mass of clouds of dust and minerals revolving around. The author suggests that these large systems have been mistaken for galaxies, but in

effect, are actually planetary systems. This explains why the number of planetary systems to stars is three to one.
In the following Chapter we will study how a star creates its own planetary system.

Chapter 12

The Birth of Planetary Systems

It is a general belief that a galaxy, such as the Milky Way, is created by the rotation of a large amount of gas.

> "*Most astronomers believe that the galaxy is formed from vast, slowly rotating clouds of gas. As this gas condensed, the speed of rotation increased to such an extent that further contraction could no longer take place toward the axis of rotation, but only parallel to the direction of rotation. This would explain the shape of a galaxy*." [66]

In the author's opinion, there is much evidence to disprove this idea. To learn about the galaxies (the planetary systems), it is necessary to study many. The author believes that by looking at a very large number of galaxies in different stages of their development, we can learn how they develop or decay. Having looked at photos of many systems, including galaxies, the author was unable to find even one example of a rotating cloud that could be assumed to be in an early stage of galaxy formation.

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[66] Hoyle Fred, *Astronomy*, Crescent Books, Inc., p. 263.

On the other hand, numerous photographs show that stars are in different stages of creating planetary systems that erroneously have been called galaxies. For example, some photos show a star giving off clouds of gas and dust into surrounding space. In others, showing a later stage, the newly-released clouds form a ring around the star. Then, other photos show clouds condensing, creating planets. Still others show planets and clouds circling the star, while in other photographs, we see that the planets and clouds are not circling the star. The reason that the planets and the clouds circle the star is because the star itself is spinning. Some photos show that during eruption, stars begin spinning. A spinning star causes its clouds and planets to revolve around itself and may have a large number of planets circling it. Finally, there are photographs that show a spinning star continually giving off clouds of dust and gas, circling the star in a spiral formation. Within these clouds of matter, planets are being formed.

The following is a series of images that show, step by step, how a star creates its own planetary system.

Figure 1 shows a star erupting, and giving off clouds of dust and gas into nearby space.

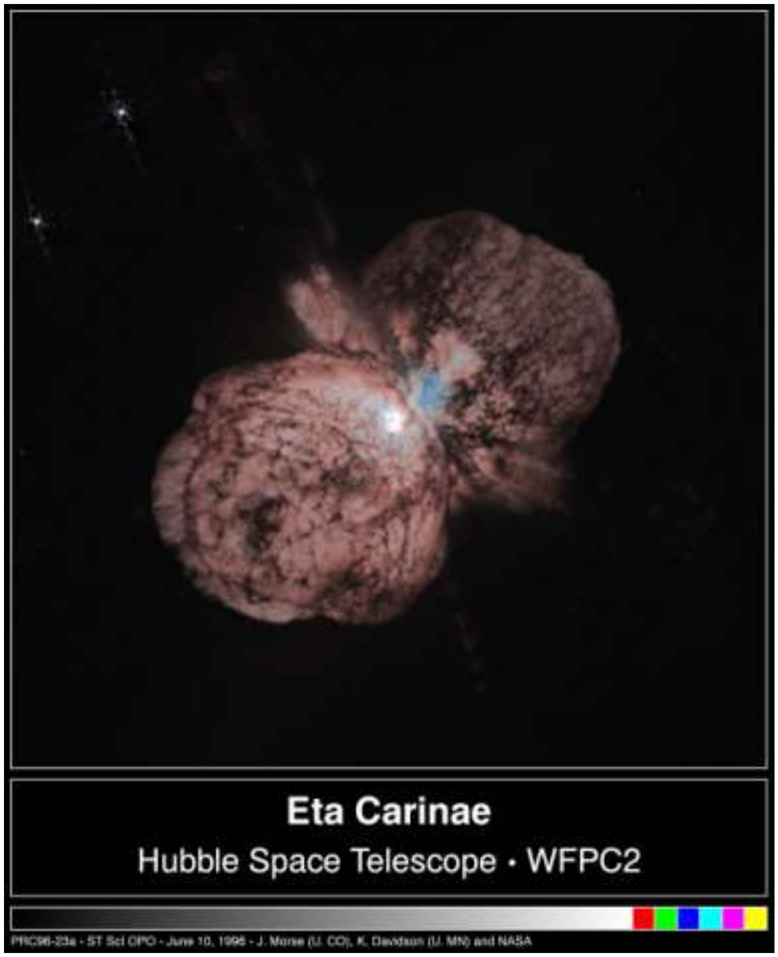


Figure 1. This image, taken by a scientist at NASA, shows a star erupting, giving off massive clouds of dust and gas into surrounding space.

Fig. 1

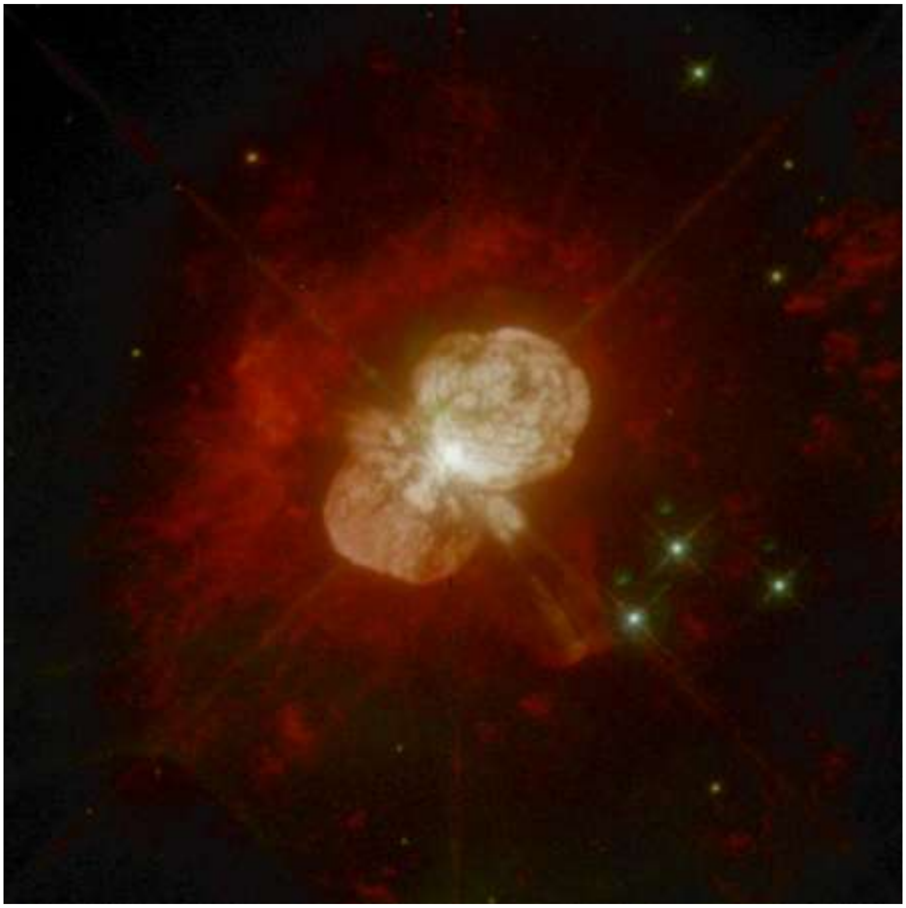


Figure 2 is another image of a star in the process of giving off clouds of dust and minerals into surrounding space.

Fig. 2

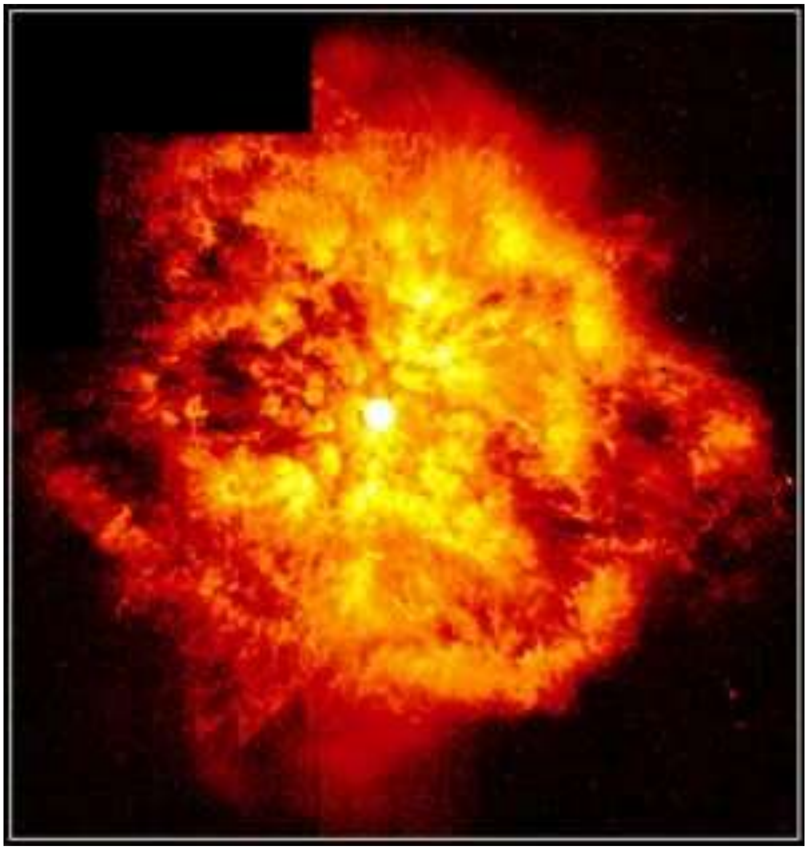


Fig.3

Figure 3 is an infrared image showing the clouds dispersing prior to forming a ring.

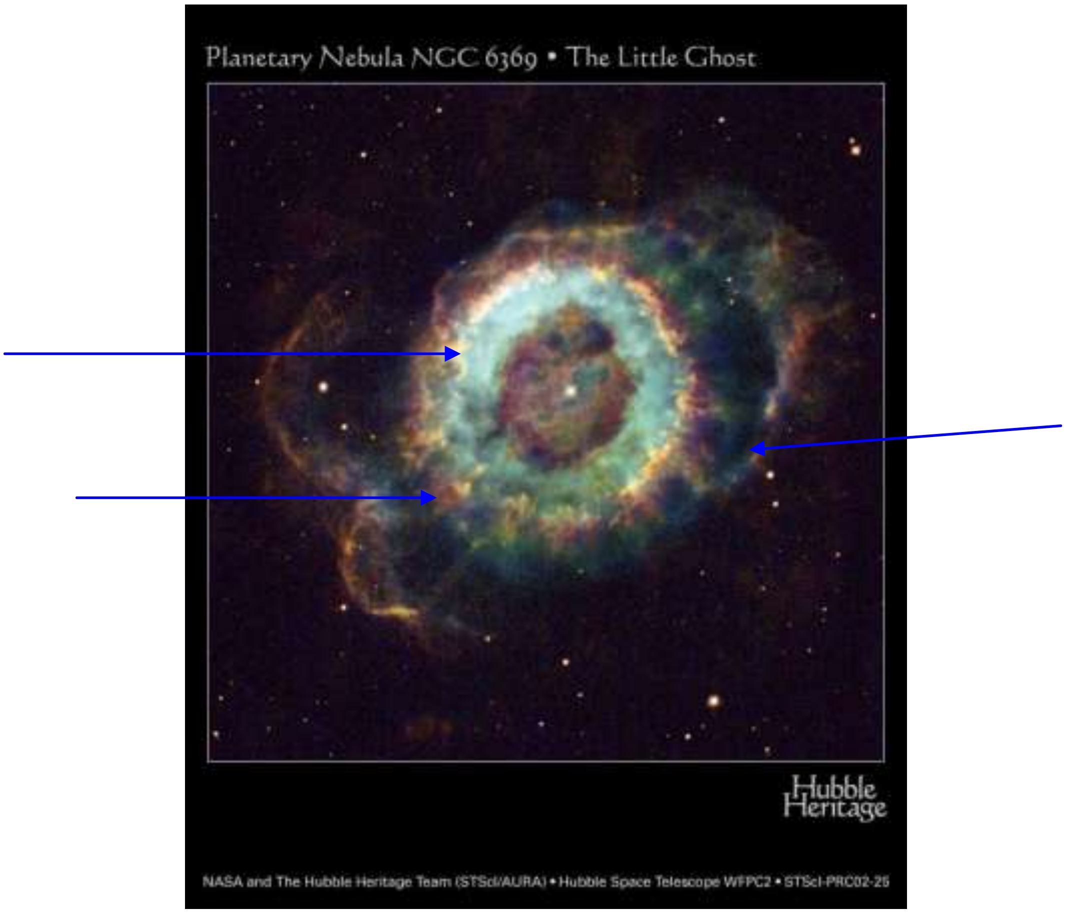


Figure 4 shows that the ring has formed.

Fig. 4

Many astronomers believe that when stars erupt, they are dying. On the contrary, the images presented here indicate that an erupting star is not dying, but rather, is beginning to create its planetary system. Eruption is a beginning, not an end.

The eruptions on our earth release large amounts of dust and volcanic minerals into our atmosphere. As such, a very large and hot body, a million times larger than the Earth, such as a star, must naturally have such great eruptions to release enormous masses of clouds into its surrounding space.[67] As the star gives off a layer of its outer shell, it may display a spectacular brightness that astronomers call a supernova.

The following are two images of Nova Cygni that were taken by the Hubble space telescope. Fig. 14 was taken in October 1992, and Fig. 15 on May 31, 1993. Figure 14 shows the star after its eruption, surrounded by an envelope of gas and dust. Figure 15, taken 7 months later, shows how the ring has expanded and condensed.

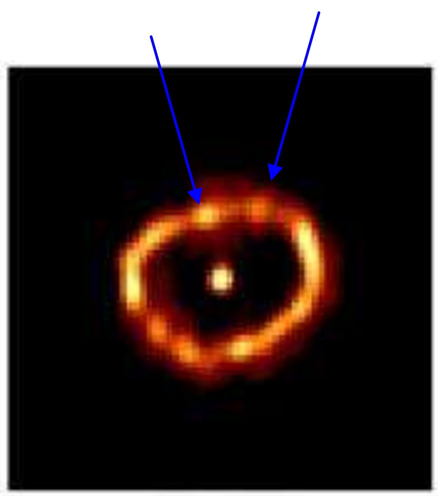


Fig. 14 Nova Cygni, October 1992.

Fig. 15 Nova Cygni seven months later.

Credit: F. Paresce, R. Jedrzejewski / NASA

According to NASA, this star is nearing its end. By contrast, it is the author's belief that this star is in the process of creating its

[67] It is the author's belief that during its early hot stage, the planet Earth had great eruptions which sent a large amount of minerals into its surrounding space. From those minerals, the moon was created.

planets. Looking at the second image, one can see that the dust and gases are in the process of condensing into planets (as indicated by arrows), in several locations.

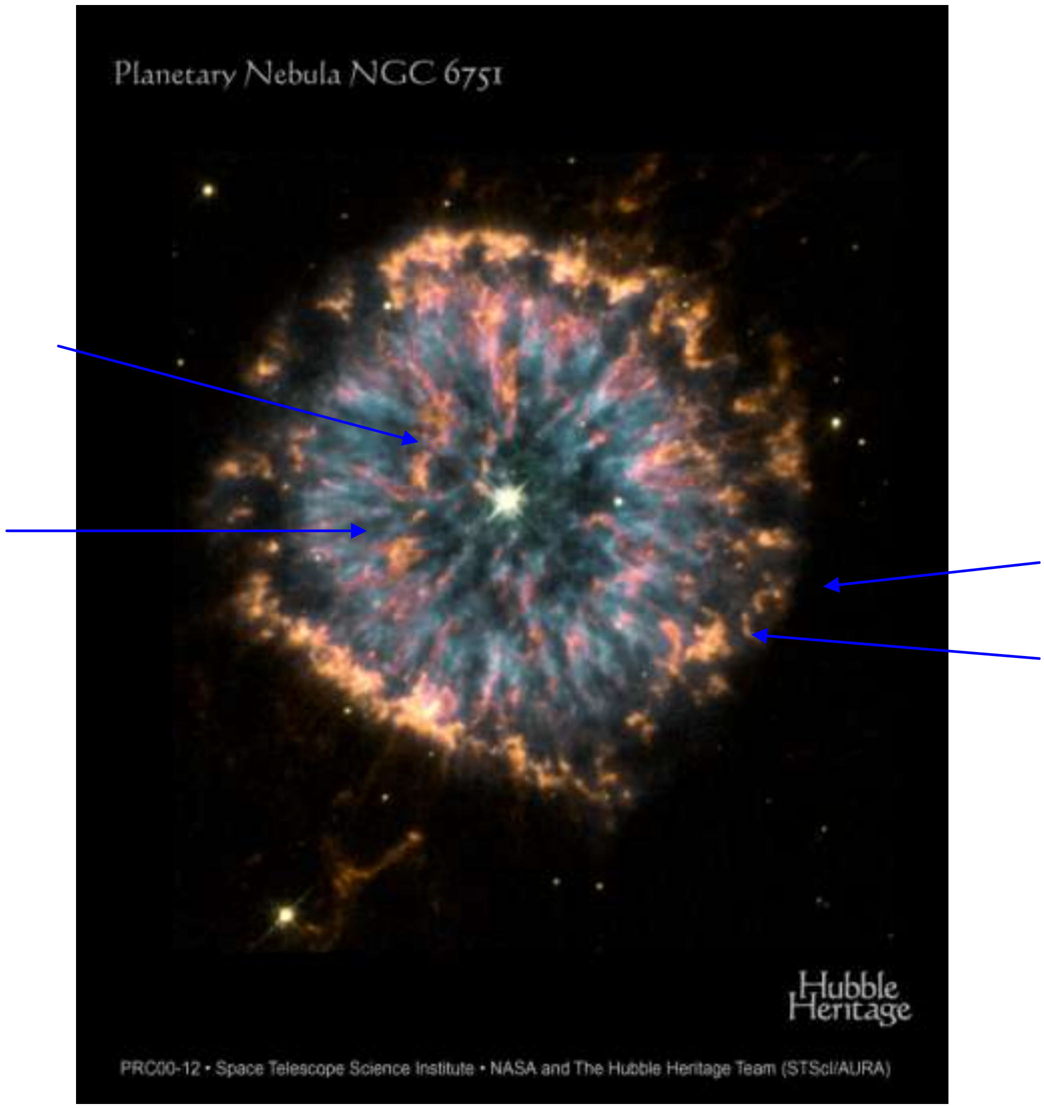
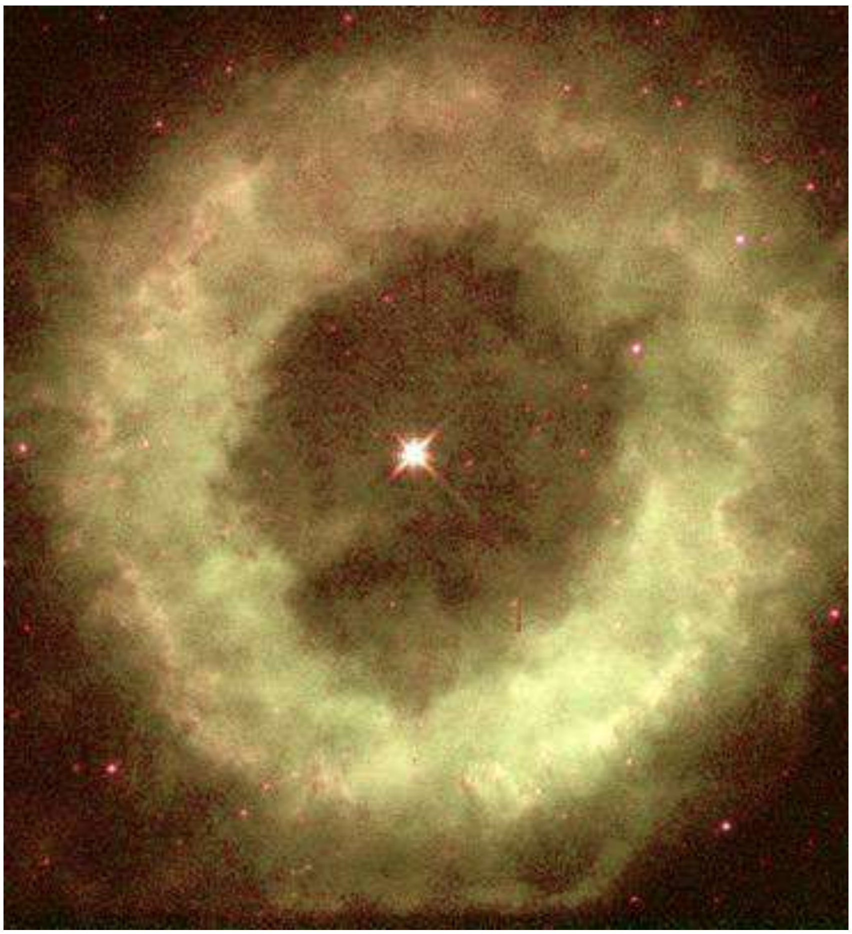


Fig. 5

Figure 5 shows clouds of dust and minerals slowly forming a ring around the star. The arrows indicate patches of dark clouds in the process of condensing, thereby creating small objects.

Unfortunately, some have not related these phenomenon to an stage in the formation of planetary systems. By glamorous names such as “nebula” some have created confusion – giving ideas that these phenomenon are isolated and have nothing to do with planetary formation.

May 18, 1998



NGC 6369: A Donut Shaped Nebula
Credit: H. Bond (STSci), R. Ciardullo (PSU), WFPC2, HST, NASA

Fig. 6

Figure 6 is showing a closer look at a central star with its ring of surrounding clouds, and within those clouds, the planets are being formed.

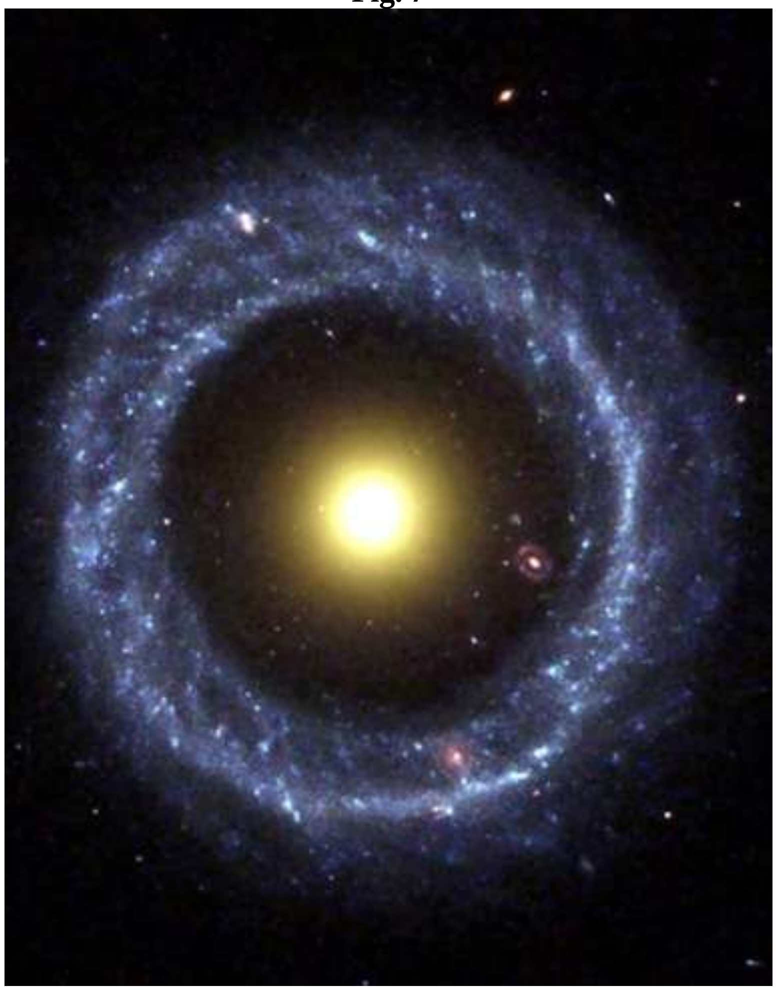
It is interesting to note that at the time this book was in the process of being edited, a discovery that supports the author's understanding of how stars create their planetary system was found on NASA's website.

> *"Astronomers using data from the infrared Astronomical Satellite discovered flat disks of dust around about two dozen nearby stars, These disks are thought to contain the raw material from which Solar systems of planets are formed; as such, these disks provide the first tantalizing evidence that planets orbiting stars are probably common occurrence.*[68]

Galaxy M 94
Credit: NASA, Ultraviolet Imaging Telescope , March 1995

[68] "Infrared Astronomy: More than our Eyes Can See" Teacherlink.ed.usu.edu/tlnasa/picture/litho/infrared/infrared.html –8k

Fig. 7



Astronomers have called this “A Strange Ring Galaxy”
Credit: R. Lucas (STScI/AURA), Hubble Heritage Team, NASA

Fig. 8

Figure 8 shows a star and its ring, having formed many planets.

Figure 9 shows a spinning star whose dust and minerals are expanding in a spiral formation. Within the clouds, planets are continuously being created.

M88, Spiral Galaxy in Coma Berenices
Credit: Robert Gendler
Fig. 9

Figure 10 shows a spinning star giving off enormous clouds of dust and minerals, circling the star in an outward spiral formation. Within the clouds, planets are created. A star’s spin sets the planets into orbit around the star. The resulting centrifugal force, together with the spirally-expanding wind created by the spin of the star, balance the star’s gravitational force and prevent the planets from falling back toward the star.

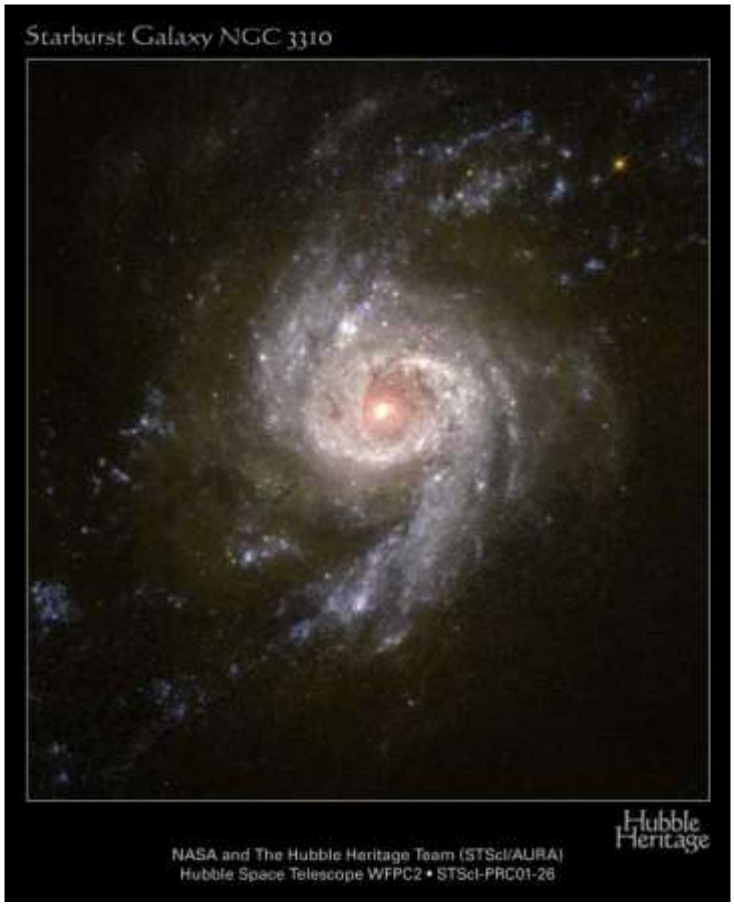


Fig. 10

In Figure 10, the spin of the central star has caused the clouds and planets to orbit the star.

However, the following image shows a star that was not spinning, and for this reason, its gravitational force was able to pull the newly formed planets back to itself. As the planets are sucked into its center, further eruption makes the star begin to spin in different directions. This spin causes the newly released clouds of matter to circle the stars in the same direction as the star. Astronomers call these stars planetary nebula.

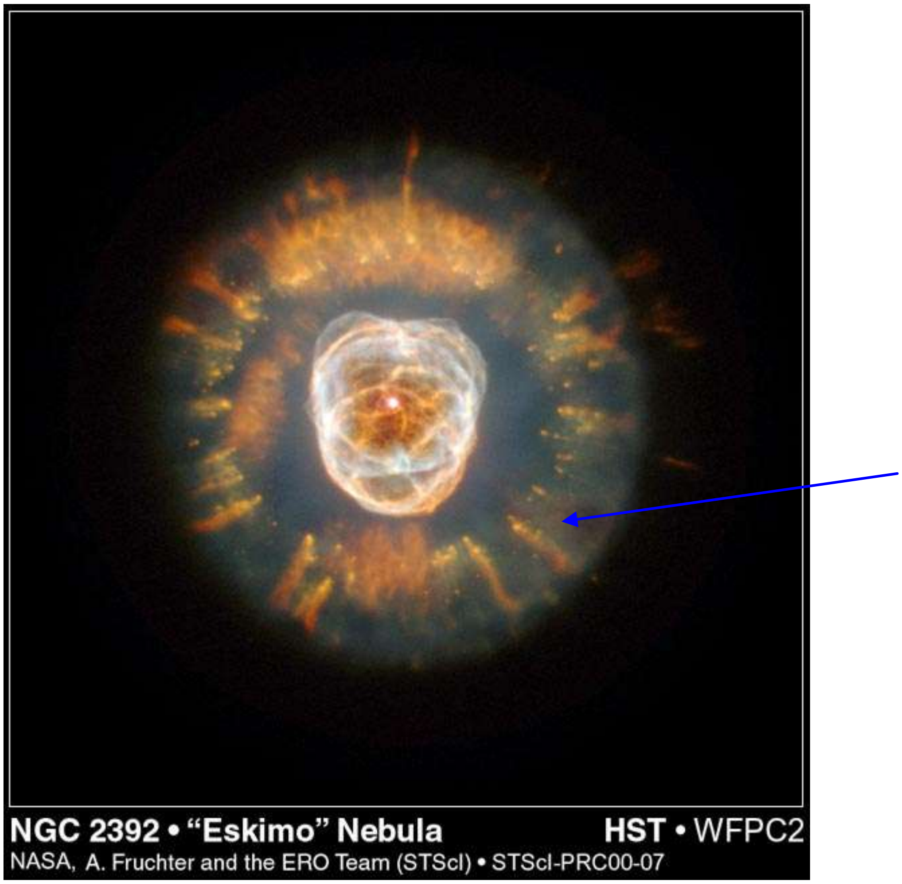


Fig. 11

Eskimo Nebula (NGC2392). The arrow shows one of the planets being formed in the ring, but because the star is not spinning, the planets are sucked into the centre. Meanwhile, the star is also in the process of giving off more clouds of minerals. The process will continue until the star begins to spin. Then, the planets will cease to fall back toward the star. The star's spin will cause all the clouds and the newly-formed planets to orbit around it. In this manner, a planetary system is formed. *Credit: NASA, Andrew Fruchter and the ERO Team [Sylvia Baggett (STScI), Richard Hook (ST-ECF),Zoltan Levay (STScI)]*

NGC 7479 Barred Spiral in Pegasus.
Credit: Robert Gendler.
Fig. 12

In Figure 12, the star has two axis of spin. In other words, it is spinning in two different directions[69] and for that reason, the clouds of gas and planets are set to orbit the star in corresponding directions.

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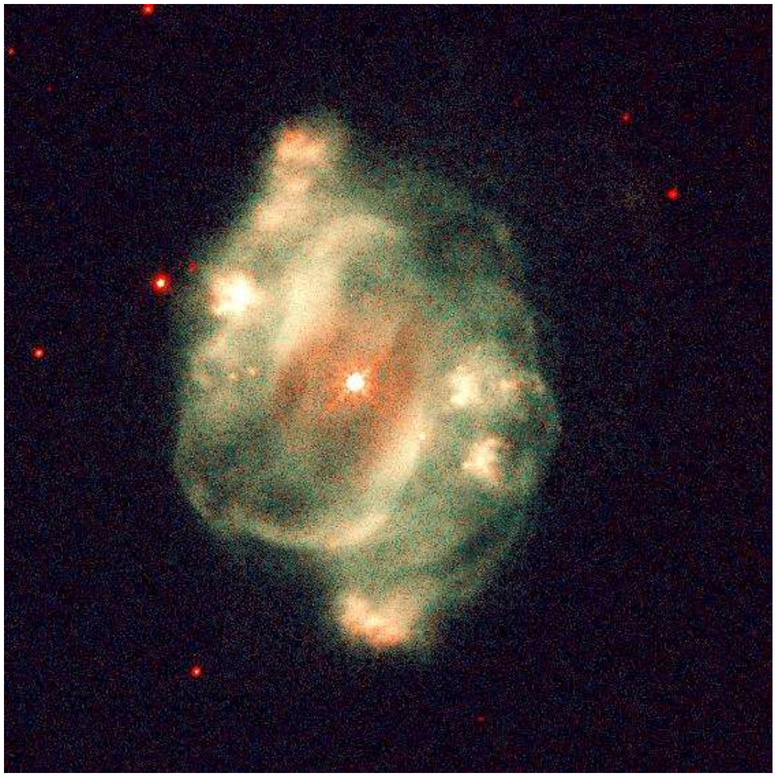
[69] It is known that the sun spins, one revolution in about 27 days. The author believes that the sun is also spinning very slowly in another direction, in addition to its main one. This extremely slow spin results in an angle between its ecliptic plane and its galactic plane.



NGC 5307, December 1997
Credit: H. Bond (ST Scl), B. Balick (University of Washington) and NASA
Fig.13

Figure 13 – Here, because the star is spinning in different directions, all the clouds of gas and minerals are rotating in the same directions as the spinning star.

Chapter 13

The Milky Way is a Planetary System

The concept that galaxies are made of billions of stars began one year after the telescope was invented. Galileo studied the Milky Way and saw a very large number of points of light that were assumed to be stars. He then presented the idea that the Milky Way was a mass of stars numerous beyond belief. Galileo's idea became the basis of the theory that suggested that galaxies were made of billions of stars.

Traditionally, many astronomers believe that the Milky Way is a galaxy made up of hundreds of billions of stars, and that our sun is one of those that is circling the centre. In addition, they believe that the centre of the Milky Way is comprised of a conglomeration of hundreds of millions of stars located tens of thousands of light-years away from our sun. They also believe that this centre is completely hidden behind clouds of dust so that no light reaches Earth from that centre. The sun and many billions of stars are thought to be circling that hidden centre.

In the previous chapter, the view was presented that galaxies are planetary systems with a single star at their centres. This understanding leads to the idea that the Milky Way galaxy must also be a planetary system, with only one star at its centre. This being the case, all the objects in the plane of the Milky Way must be planets, asteroids and clouds of dust and gases, rather than billions of stars. At the centre of Milky Way, there must be one star which all objects in the plane of the Milky Way must orbit. Furthermore, all visible objects in the plane of the Milky Way must reflect the light of that star.

If we look at the images of any galaxy, we notice that the colour of its centre is unique; all have a yellowish colour that resembles our sun, while the colour of orbiting objects are bluish or whitish.

This leads to the question: could it be that the sun is the centre of the Milky Way? This question takes on special significance considering that many astronomers, after decades of careful study of the Milky Way galaxy, have concluded that the sun was located somewhere near the centre of the galaxy.

The Sun is Located at the Centre of the Milky Way

Although many studies have indicated that the sun is located somewhere at the centre of the Milky Way, no discussion was found in the existing literature with regard to the possibility that our sun could actually be the centre of the Milky Way galaxy. Efforts to identify the centre of the Milky Way led to disappointment. The repeated observations of the plane of the Milky Way, in an attempt to locate its centre, led to frustration. Many questioned why the centre of the Milky Way appeared to be missing. Astronomers generally believed that the Milky Way was made of billions of stars similar to our sun. It appears that for some, there was an ongoing failure to entertain the logical alternative that the only star in the Milky Way could be our sun, and that all the other objects could be planets, asteroids and clouds of dust and minerals orbiting the sun.

Early in the twentieth century, several studies confirmed what the nineteenth century scientists had found: the sun was somewhere at the centre of the Milky Way.

> "*A half-dozen lines of study had consistently indicated that the sun was near the centre of the galaxy.*"[70]

[70] Whitney, Charles Allen., *The Discovery of our Galaxy*, Alfred A. Knopf, (1971), p. 212.

In 1785, after carefully counting the number of the stars in different regions of the sky, William Herschel came to the conclusion that the sun was somewhere near the centre of the Milky Way.[71]. After two decades of studying the different luminosity of the stars in various regions of the sky, Hugo von Seeliger also concluded that the sun was located near the centre of the Milky Way.[72] In addition, after forty years of studying the stars in the Milky Way, Jacobus Kapteyn, the most renowned astronomer of his time, developed a plan. This plan involved measuring the luminosity, spectral type, radial velocity, parallax, star count and proper motion of the stars in 206 zones in sky. It was an enormous project, and was the first coordinated statistical analysis in astronomy involving the cooperation of over 40 different observatories. After all the years of study, Kapteyn came to exactly the same conclusion: the sun is indeed located near the centre of the Milky Way.[73]

Studies regarding star densities in various regions of the skies revealed that stars thin out in all directions away from the sun[74]. The spectral type of stars in the Milky Way also revealed the same result. The proper motions, parallaxes, and radial velocities of the stars in the Milky Way showed that all stars orbit a centre where the sun is located. Studies have shown that all luminous objects nearer to the sun are actually moving faster than those farther away.[75] The Swiss-American astronomer Robert Julius Trumpler, while studying the distances to globular clusters, came to the same conclusion.

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[71] The reason he was led to the understanding that the sun is located near the center of the galaxy rather than at its center is because all his observations were made from the earth at a location near the sun, not from the location of the sun.

[72] *The Norton History of Astronomy and Cosmology*, Editor Roy Porter, W.W. Norton & Company, New York, London, (1995), p. 490.

[73] Croswell Ken, *The Alchemy of the Heavens,* Anchor Books, (1995), p. 21

[74] Bok Bart J. and Bok Priscilla F., *The Milky Way*, Fifth Edition, Harvard University Press, (1981), p. 173.

[75] Hoyle Fred, *Astronomy,* Crescent Books, Inc. p. 258.

> *He was determining the distances to the globular clusters by deducing the absolute magnitude of individual stars in the cluster based on their color and spectra. Trumpler then compared the absolute magnitude to the apparent magnitude to calculate their distance. His study once again placed the solar system at the center of the galaxy.* [76]

These studies, one and all, have indicated that the sun is located near the centre of the Milky Way. In 1914, Harlow Shapley, based on the hypothetical positions of sixty five globular clusters in the sky, speculated that the sun is located at the edge of galaxy, rather than, at its centre.

> *"Thus, single-handedly, Shapley removed the sun and earth from a central position in the Milky Way and placed us close to its outskirts – an almost Copernican accomplishment."*[77]

The following is a quotation from the Encyclopedia of Astronomy describing the superficial reasons that led the public to change their understanding in regards to the sun's location at the centre of the Milky Way galaxy were:

> *Early in this century, the globular clusters played an important role in finally dethroning the sun from its assumed position at the centre of the galaxy. Using the newly discovered period-luminosity relationship of Cepheid variable stars to measure the distances to these clusters, and thereby gauge the extent of the galaxy, Harlow Shapley found that they were strongly concentrated towards the*

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[76] The Mysterious Milky Way, M. Colleen Gino www.astrophys-assist.com/educate/mmw/mmw.htm

[77] Friedman Herbert, *The Amazing Universe*, The National Geographic Society, (1975), p. 44.

Milky Way in Sagittarius. He reasoned that this grouping reflected the underlying distribution of matter in the Galaxy and consequently, that the massive central regions lay some 16 kpc[78] *away from the sun.*[79]

Despite the fact that Shapley's theory contravened earlier scientific studies and conclusions, and despite the fact that he did not have any solid evidence to support it he was able to influence public opinion by a media campaign and a famous debate. Even though many astronomers believed that Shapley's theory was based on a weak and shaky hypothesis, some swallowed the idea in its entirety.

The reason that led to the acceptance of Shapley's idea was because of a shift from the sun-centered "heliocentric" concept to a non-sun-centered cosmos. Astronomer Ken Croswell writes;

"*Just as Copernicus had removed the Earth from the centre of the solar system, so Shapley would yank the sun from the centre of the Milky Way and put it in the celestial equivalent of the suburb".*[80]

At the time Shapley presented his paper, he believed that many galaxies were inside the Milky Way. With this kind of understanding, he was able to influence a large number of his fellow astronomers, as well as capture the imagination of the public with his belief that the location of the sun was at the edge of the Milky Way.

In 1930, Robert Trumpler's studies of distances to the globular clusters disproved Shapley's theory.[81] However,

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[78] Each kpc is equal to 1000 parsec or 3260 light-years and 16 kpc is equal to 52,160 light-years.

[79] - *Encyclopedia of Astronomy*, The Hamlyn Publishing Group Limited, London, New York Sydney, Toronto, (1979), p. 114.

[80] Croswell Ken, *The Alchemy of the Heavens*, Anchor Books, (1995), p. 24.

[81] See website "The Mysterious Milky Way, M. Colleen Gino" www.astrophys-assist.com/educate/mmw/mmw.htm

Trumplers' studies, as well as many others that disproved Shapley's theory, were all ignored.

Let us assume that Shapley was correct and that the sun is located at the edge of the galaxy. Astronomers generally agree that the centers of galaxies have a yellowish colour and all the objects circling the centers have a bluish colour. Is it not odd that the sun, with its yellowish colour, is located at the edge of the galaxy instead of at the center? Moreover, let us assume that Shapley was correct and the center of our galaxy is located at Sagittarius A*. In that case, all objects at Sagittarius A* should have a yellowish colour. Why, then, do all objects at Sagittarius A* have a blue colour? A group of astronomers in Los Angeles have recently raised this important question.

> *"One of the most perplexing problems associated with the supermassive black hole at the centre of our galaxy is the origin of the young stars in its vicinity."*[82]

It must be noted that astronomers generally believe the colour blue means the star is young. Is it not odd that the centre of all galaxies have a yellowish colour, but the colour of the objects at the alleged centre of our galaxy are bluish? Many admit this to be a most puzzling question which they have not been able to answer. These facts would suggest, rather, that the sun is not at the edge of the galaxy, nor is the centre where Shapley claims it to be.

If one carefully investigates Shapley's reasoning, one will realize that it is based on faulty speculations. Not one single argument that he made is built upon correct information or a solid and scientific foundation.

First of all, Shapley claimed that the existence of a few dozen extra star clusters toward the constellation of Sagittarius tells us that

[82] June 3, 2005, J. R. Lu, A. M. Ghez, S. D. Hornstein, M. Morris, E. E. Beckin. UCLA Department of Physics and Astronomy, Los Angeles, CA, 90095-1562. See " IRS 16SW – A New Comoving Group of Young Stars in the Central Parsec of the Milky Way".

the centre of the Milky Way galaxy must be located in that direction. Let us investigate this idea.

Calculation shows that if we add up the number of stars in all the globular clusters that Shapley claimed are concentrated toward Sagittarius, and compare that number with the number of stars astronomers believe exist in the Milky Way, it is like comparing one drop to one hundred litres of water, and claiming that the one drop should tell us where the centre of gravity of the one hundred litres of water is located. Shapley claimed that several dozen globular clusters make a halo around the alleged centre of the Milky Way galaxy. However, as previously mentioned, Robert Trumpler's studies showed that the centre of the halo is the sun, and not where Shapely theorized it was located. Those who pursued research according to Shapley's theories rather than Trumpler's findings, encountered difficulties understanding this halo. Further to this, it is interesting to note that some recent observers have found evidence that questions some fundamental assumptions about the halo and its centre.[83]

Moreover, Shapley claimed that he was able to find the distances to globular clusters, and knowing their distance, could determine the location of the centre of our galaxy. At the same time, he claimed that many galaxies, including Andromeda, were inside the Milky Way. How could one accept Shapley's claim regarding the distances to globular clusters, knowing that astronomers have already proven him wrong about the position of galaxies and that none of them were inside the Milky Way? In addition, the distances of the hundreds of thousands of light years that Shapley determined for the location of the globular clusters that allegedly made a halo around a hidden centre were also wrong. In previous chapters, it was proven that even a 100" telescope could not show a star beyond a few thousand light years. If some of the star clusters are tens of thousands of light years away, as Shapley alleges, how could its individual stars be seen clearly enough to identify a variable star (Cepheid variables), measure its periods, and calculate its distance? Bear in mind that the

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[83] See website; Sloan digital sky survey turns its eye on the galaxy. Washington, DC. January 11, 2006.

objects in a cluster are intrinsically so faint that astronomers think they are burnt out stars. At the distances he calculated, no star would be visible.[84]

Let us assume that a massive cloud of dust has obscured the light of the alleged centre of our galaxy. There must, therefore, exist a very distinguishable bright horizon where the clouds thin out above and below the centre. Where, then, is this large and distinguishable bright horizon? The following are two photographs each showing a galaxy from its side. Notice how bright the centres are.

[84] Furthermore, Shapley's use of Cepheid variables in a cluster used to estimate the distances of stars is also faulty. It has been assumed that the variables must be stars, but in fact, all indications tell us that they are not stars, but rather asteroids. Therefore, a star cluster is really an asteroid cluster. The period-luminosity relationship found for objects in asteroid clusters was applied to stars.

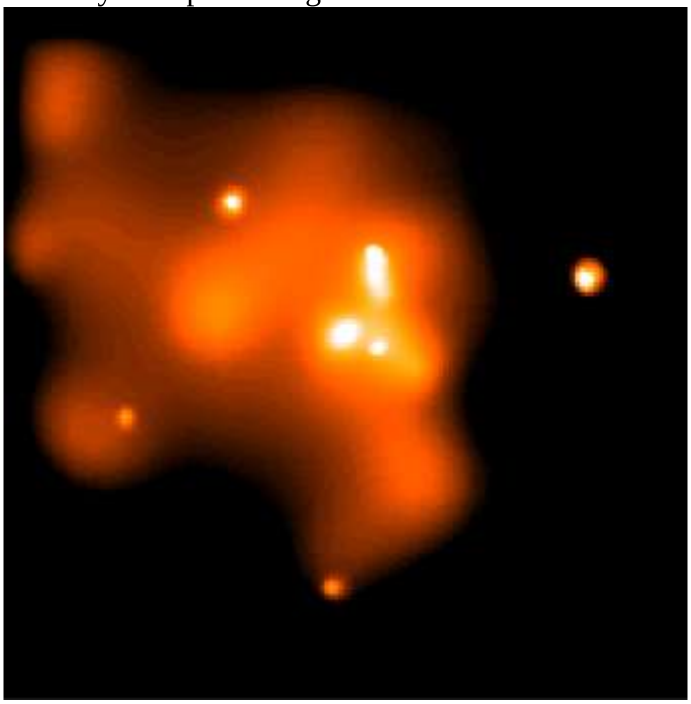
Fig. 1

Fig. 2

If we look at any galaxy, we can see their bright horizons (the bulges) that indicate where their centres are located. How is it, then, that we cannot see the bright horizon, the bulge, of our own galaxy? Since a distinguishable bright area cannot be found in the plane of the Milky Way, supporters of Shapley's theories concentrated on two small, separate spots in the direction of Sagittarius, which are a little brighter than other spots in the Milky Way. On the basis of this luminosity, they invented the idea that these two spots indicated the presence of the centre of the Milky Way in that direction. The fact is that similar spots also exist in other directions, the only difference being that they are a little less bright.

Perhaps in recognition that this idea did not stand very well on its own, attention was next focused on x-rays, gamma rays, and infrared images. This led to a postulation that the radiation in the direction of Sagittarius suggests that the centre of the Milky Way was in that direction. The problem with this particular theory is that this same type of radiation also comes from other directions in the Milky Way.

If we investigate all the 'evidence' that some have presented to show that the centre of the Milky Way is in the direction of Sagittarius, we will find that all of it is tailored to fit a preconceived idea. For example, some astronomers claim that after 25 years of research, they may have found faint x-rays coming from the centre of the Milky Way galaxy. The following are two photographs, and the explanations they have provided give some idea of this evidence:



Credit: NASA/MIT/PSU **Fig. 3**

"CHANDRA PRESS RELEASE, January 14, 2000: Culminating 25 years of searching by astronomers, researchers at the Massachusetts Institute of Technology say that a faint x-ray source, newly detected by NASA's Chandra X-ray Observatory, may be the long-sought X-ray emission from a known

supermassive black hole at the centre of our galaxy. This X-ray source is the bright point at the center of the image above." [85]

This is another so-called 'x-ray evidence' to support a predetermined idea about black holes. Although the evidence has no justification, some continue to speculate that there is a centre in that direction. For example, they claim that the centre of our galaxy is amazingly faint in x-rays compared to distant galaxies, suggesting that the black hole at the centre has been starved by a lack of in-falling material.

2004 November 6

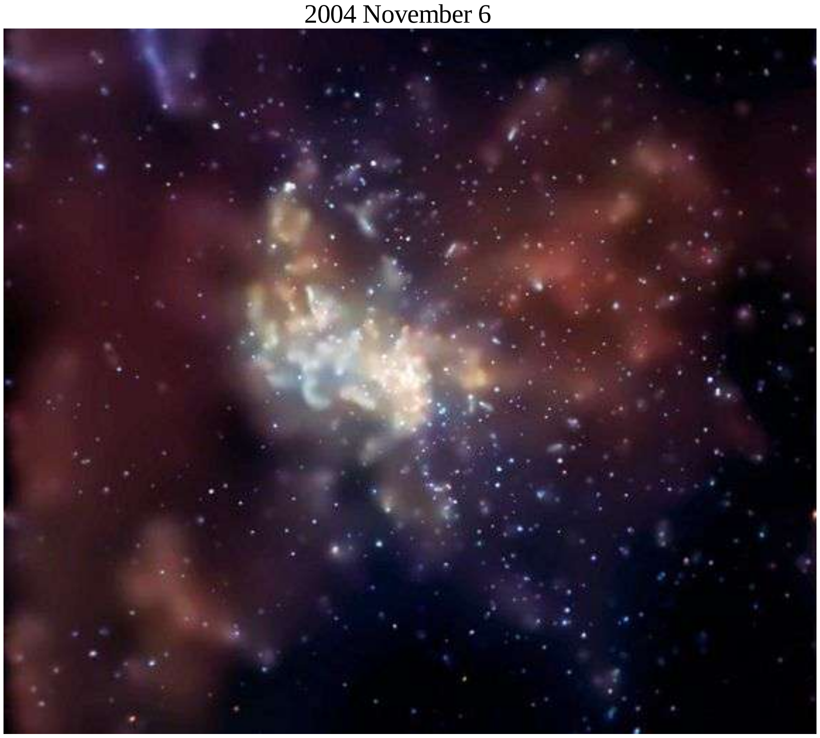


Fig. 4 "X-rays from the Galactic Core"
Credit: Fred Baganoff (Mit), Mark Morris (UCLA), et al, CXC

[85] See website: NASA's Picture of the Day, or Astronomy Picture of the Day, Chandra Press release, January 14, 2000.

"Exlanation: Using the orbiting Chandra X-ray Obsevatory, astronomers have taken this long look at the core of our Milky Way galaxy, some 26,000 light-years away. The spectacular false-color view spans about 130 light-years. It reveals an energetic region rich in x-ray sources and high-lighted by the central source. Sagittarius A, known to be a supermassive black hole with 3 million times the mass of the sun. Given its tremendous mass, Sagittarius A* is amazingly faint in x-rays in comparison to central black holes observed in distant galaxies, even during its frequent x-ray flares. This suggest that this supermassive black hole has been starved by a lack of infalling material."*[86]

The above quotation contains series of speculations. The most noteworthy portion of this quotation is the description of the x-rays. The quotation suggests that the x-rays radiating from the alleged centre of the Milky Way are 'amazingly faint'. It is known that the centre of galaxies are a powerful source of x-rays. Given this fact, it stands to reason that the x-rays are very faint because they are not from the alleged centre of the Milky Way.

Let us assume, for the moment, that Shapley's calculations of the distances was correct and that the allegedly hidden centre of the Milky Way is 26,000 to 52,000 light-years away from the sun. Then let us investigate what this means from our perspective on Earth. If we look at the plane of the Milky Way, we would see that its band arches all around the sky like a ring. We would find that the ring has approximately the same thickness all around, and all the objects in the plane of the Milky Way are so far away, that looking at the overall ring, we would find that it has a homogeneous pattern. If we were not close to the centre, would it not be an odd coincidence that we are located in the centre of a huge ring that has, more or less, a homogeneous thickness?

[86] See NASA's archive "Astronomy Picture of the Day", November 6, 2004.

The Milky Way Credit:Larry Landolfi

Fig.5

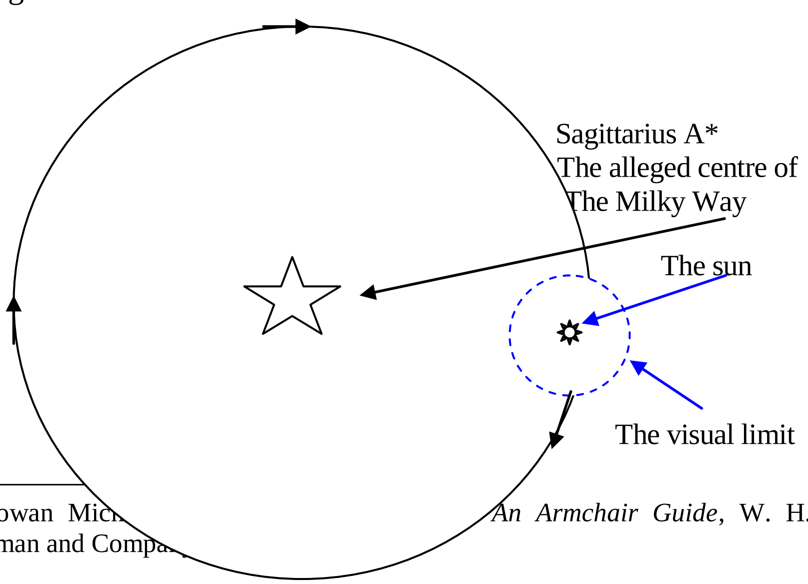
Let us assume, again, that the Earth is placed at the edge of the galaxy. In that case, looking toward the alleged centre, we should see a ring with a large bulge indicating where the centre is located. Is it not an odd coincidence that there is no such bulge anywhere in the ring at all? Furthermore, the distance of 26,000 to 52,000 light years to the centre is not small. If we were to look in the direction of the centre from this distance, we would be able to see a large percentage of all the stars belonging to the Milky Way in that direction. How is it that the number of stars in the ring, all around, is almost the same?

One of the reasons that leads some to conclude the sun to be located somewhere near the centre of the Milky Way is because the number of luminous points in different sections is, more or less, the same. Michael Rowen writes:

> *"The Dutch astronomer Jacobus Kapteyn used star-counts to derive a model of the Milky Way in which the sun lay close to the centre of a huge disk."*[87]

Some claim that, due to interstellar dust, objects more than a few kilo parsecs (several thousand light-years) away are obscured from earthbound vision, and that the falloff in the number of visible stars is because we can no longer see through the haze. In this regard, J. C. Kapteyn, the most famous astronomer of his time, investigated that possibility. He came to the conclusion that interstellar dust had no noticeable effect on his studies of the Milky Way. He also concluded, after many years of study, that the sun is located somewhere near the centre of the Milky Way.

Let us assume that, due to interstellar dust, objects farther than several thousand light-years away are obscured from sight on Earth. Let us also assume that Shapley was right, and all stars orbit a hidden centre located in the direction of Sagittarius (see figure 6). The figure is showing the Milky Way. The sun, together with the stars in the Milky Way, are circled the alleged galactic centre located at Sagittarius A*.



[87] Rowan Mic… *An Armchair Guide*, W. H. Freeman and Compa…

Fig. 6

In figure 6, the blue colour circle around the sun represents the limit of several thousand light years in which stars would be visible to an observer on Earth in the middle of the circle. Beyond the blue circle, no star would be visible due to the haze of interstellar dust.

If the above ideas are true, then all visible stars within the circle would be moving around the center (Sagitatrius A*), and no star would be moving towards or away from the center. However, many studies (including the Hipparcos data) have already confirmed that in the neighborhood of the sun, some stars move towards, while some others move away from the alleged center.

> "*Astronomers have discovered that many stars in the vicinity of the sun have unusual motions…*"[88]
>
> *"Using data from ESA's Hipparcos satellite, a team of European astronomers has now discovered several groups of 'rebel' stars that move in peculiar directions, mostly towards the galactic center or away from it.*"[89]

In the author's view, the concept of 'rebel stars' is highly speculative and questionable. If such objects exist in this galaxy, then they should exist in other galaxies as well. Furthermore, if the

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[88] See website; ESA Science News Release 23- 2004
See also ESA's Hipparcos Finds Rebels With a Cause. (Jan. 28, 2006)
www.esa.int/esaSC/pr_23_2004_s_en.html

[89] European Journal of Astronomy & Astrophysics, Oct. 20, 2004.
See also website; ESA's Hipparcos Finds Rebels With a Cause. (Jan. 28, 2006)
www.esa.int/esaSC/pr_23_2004_s_en.html

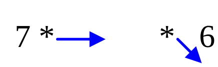
concept of rebel stars is true, then all of the blue objects allegedly located at the so-called center of Milky Way must also be rebels, as they should be located in the spiral arms rather than at the center of the galaxy. Furthermore, our sun must also be a rebel star, as being yellow, it should be located at the center rather than at the edge of the galaxy.

The fact that the so-called stars in the neighbourhood of the sun move toward or away from the so-called galactic center disproves the idea about the location of the center. On the other hand, if we assume all objects in the Milky Way are circling the sun then, from our perspective, we would see groups of so-called stars moving in different directions.

The following observations support this concept:

> "*According to this research, based on data from ESA's Hipparcos observatory, our stellar neighborhood is the crossroads of streams of stars coming from several directions.*"[90]

Considering the fact that the sun is the centre of the Milky Way and that the so-called stars are actually planets circling around the sun, then from an earthbound perspective, depending on the direction one is looking from, one would find groups of the so-called stars (planets) appearing to move in many different directions (see Figure 7). Some of the objects (5) would appear to be moving toward Sagittarius A*, and another group (2) would appear to be moving away from it. A third group (6,4,3) would appear to be circling Sagittarius A* in a clockwise direction, while a fourth group (1) would appear to be moving in a peculiar direction.



[90] European Journal of Astronomy & Astrophysics, Oct. 20, 2004. http://www.edpsciences.org/articles/aa/pdf/press-releases/PRAA200409.pdf

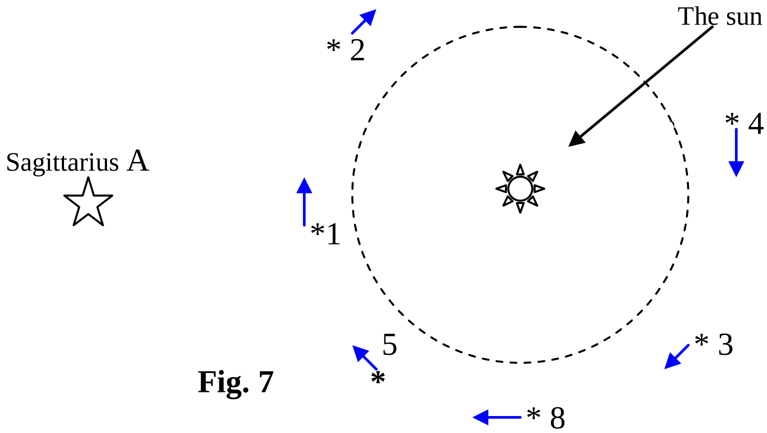


Fig. 7

Since astronomers measure only a very small displacement (proper motion), they would get the impression that each object is moving in a straight line. The reason for this is because a very small change in the position of an object, with a very huge orbital path, would not show its curvature. Therefore, it is difficult to see that the path of an object is curved, and is actually orbiting the sun. Bear in mind that the same study has discovered that these same objects have a chemical composition different from the sun, further confirming that they could be planets in orbit.

Further confirming that the objects in the plane of the Milky Way are asteroids or planets that circle the sun, astronomers in the early twentieth century noticed that all objects nearer to the sun move faster than those farther away.[91]

> *"These stars are known as high-velocity stars, a name derived from the fact that those close by the sun are moving faster."* [92]

According to Newton's law of gravity, objects nearer to the centre of gravity must be moving faster than objects farther from the centre.

[91] Hoyle Fred, *Astronomy*, Crescent Books, Inc. p. 258.
[92] Hoyle Fred, *Astronomy*, Crescent Books, p. 258.

The fact that all the so–called stars nearer to the sun move faster than those further away indicates that the sun must be the centre of the gravity of all these objects. If we study the nine planets in our solar system, we find that the nearer a planet to the sun, the faster it moves. In other words, the farther a planet is from the sun, the slower its orbital velocity. This decrease in the velocity of the planets the farther they are from the sun corresponds with Newton's Law of Gravity. Calculations show that planets a few times farther than Pluto would orbit so slowly that they would take at least a few thousand years to complete one orbit around the sun. Astronomers believe that Sedna, a few times farther than Pluto, takes ten thousand years to complete its orbit around the sun. Further evidence to support the theory that all of these objects are planets dates back to 1892. At that time, an astronomer by the name of Monck, found that objects with large proper motion had systematically different spectra from distant stars with very small proper motion.[93] Monck's discovery shows that the objects nearer to the sun must be planets, and the reason is why they have a different colour and spectra from the distant stars. Over one hundred years later, astronomers have partially confirmed Monck's discovery.[94]

Consider that at a distance of several times farther away than Pluto, there exist billions of asteroids, thousands of planetoids, and hundreds of planets, which, together with clouds of gas, dust, rocks and minerals, form the plane of the Milky Way. Since all these objects move very slowly, imagine how slow their relative motion to each other would be.

From the perspective of our planet, all of the above mentioned objects would appear as stars, because within a span of ten or twenty years, there would not be any significant changes to the relative positions of those objects. This means that from our perspective, they would all appear to be stars, but in reality, they are planets and asteroids. Since all of these objects are very close to each

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[93] Publication of the Astronomical Society of the Pacific, 100, p. 1036.
[94] ESA Science, News release 23-2004

other, from our perspective, they would have very small relative parallaxes, giving us the false idea that they are stars.

Altogether, these findings lead to the understanding that the sun must be the centre of a very large number of orbiting objects.

All Objects in the Milky Way Reflect the Light of the Sun

In previous chapters, it has been shown that many planets have been mistaken for stars.

Let us examine clear photographs of the Milky Way,
These pictures show that all objects in the Milky Way are reflecting light rather than giving light.

The Plane of the Milky Way. Credit: John Gleason & Steve Mandel.

Figure 8 shows the plane of the Milky Way. Note how the object indicated by the arrow stands out among all other objects in the Milky Way. How its brightness and yellowish colour resembles the sun and is distinguished from the rest of the objects in the Milky Way. It is so radiant that all other objects in comparison appear very faint and dull.

The Plane of the Milky Way. Credit: John Gleason & Steve Mandel.

Fig. 8

Figure 4 shows the plane of the Milky Way. The bright star (indicated by an arrow) that has a yellowish colour is similar to that of the sun. Note how faint every other object is in comparison to that star.

According to Professor Edward C. Pickering, of Harvard University, objects resembling the sun (upper left) do not belong to Milky Way and that it must be located beyond the Milky Way. The photograph clearly shows the contrast between the object that is giving light and the ones that reflect light. The photograph shows that the bright object must be star giving light while all other objects must be planets, asteroids and clouds that are reflecting light. Bear in mind that Pickering after decades of study came to the conclusion that the sun in the Milky Way galaxy has a unique colour and spectrum. Considering the fact that the centre of the Milky Way is missing and that many studies have indicated that the sun is located at its centre then it is logical to see that the sun is the centre and that all the objects in the Milky Way must be reflecting the light of the sun.

A Dust Clouds in NGC 281 **Fig. 9**

Credit: NASA, ESA, Hubble Heritage Team, (STScI) and P. McCulough (STScI)

Figure 9 shows some of the dust clouds in the Milky Way. All the shadows inside the walls of the cavities, shown by the arrows, indicate that the cloud is not generating light but rather, is reflecting the light from the direction of our sun.

The Sun as a Source of Enormous Energy

Previous chapters described how the light, infrared, and ultraviolet radiation study of various galaxies shows that at the center of each galaxy there exists a small object, which is the source of enormous energy. The mystery of how a relatively small object could be the source of so much energy, far exceeding that in the rest of these galaxies, was not solved. If the sun is the center of the Milky Way galaxy, then it must also be the source of this great energy.

The Earth is located 150 million kilometres away from the sun, yet if we gaze at it for a few minutes, we will become blind. This gives an idea of how luminous the sun is. Recall how an earlier chapter demonstrated that the apparent light of the sun is equivalent to a 17,000-watt light bulb located one meter away.

We know that Pluto is 39.0 AU away from the sun. At that distance, Pluto reflects the light of the sun so well that it is not distinguishable from stars by the amount of light it reflects. Just recently, a planetoid was discovered and named Sedna, which also orbits the sun, and is located at a distance 3 times greater than that of the Earth to Pluto. Sedna also appears as a star. This fact tells us two things: first, the light of the sun is so powerful that it causes a planetoid to appear as a star at such a distance, and second, the bright points in the plane of the Milky Way could potentially be sunlight reflecting off planets and planetoids.

Any study of the sun will show that it is a strong source of heat, ultraviolet radiation, x-rays, and gamma rays. Were it not for the shielding effect of the Earth's atmosphere, all living beings on the earth that are exposed to the rays of the sun would burn in a very short period of time. However, the protecting atmosphere blocks most of the heat (infrared radiation), x-rays, the gamma rays and the ultraviolet radiation from the sun.

The fact that the centres of galaxies are strong sources of infrared, ultraviolet, x-rays and gamma rays and that our sun is just such a source, would suggest that the sun could be the centre of Milky Way.

The understanding that all the objects in the Milky Way are nearby planets or asteroids, and that the sun could be the centre of the Milky Way, leads to the understanding that all these objects must circle the sun.

In the next section, more evidence will be presented in support of the view that all objects in the Milky Way circle the sun, which in turn, will lead to the view that the sun must be located at their centre.

The Sun as the Centre of the Milky Way

Let us examine the sun - its volume, mass, light and other properties, to see if it is actually large and bright enough to be the centre of the Milky Way.

Before we investigate how large and luminous the sun is, it is interesting to note that astronomers estimate that there are millions of comets circling the sun. Considering that comets have long tails, they are easily distinguishable from stars or planets. Such a large number of comets circling the sun could give us an idea of how large the sun and the solar system could be.

The Great Volume of the Sun

Since the earth is in close proximity to the sun, scientists have been able to study the sun and get a good idea about its diameter. They have calculated it to be 1,390,000 km., or about 3.7 times the distance of the earth to the moon. The volume of the sun is so great that 1,300,000 earth-sized planets could fit inside it.

If we look at the images of any galaxy and compare the size of its centre with any of its planets, we would see that the diameter of its centre is only several times larger. The diameter of the sun in comparison to the diameter of its largest planets is at least ten times larger. This means that, the size of the sun is large enough be the centre of a galaxy.

The Great Mass of the Sun as the Centre of a Large Galaxy

Is the mass of the sun large enough to be the centre of a large galaxy? To answer this, let us first see what the scientists claim about the sun. Astronomers contend that the sun is composed of hydrogen atoms. They claim that its mass is only 333,000 times that of the earth, but its volume is 1,300,000 times that of the earth. They have calculated the sun's density to be 3.9 times less than that of the earth. The following arguments contend that the mass and density of the sun given above is erroneous, and that the actual density is at least 3.5 times higher than that of the earth.

Gustav Krichoff made breakthrough discoveries in the spectrum analysis of hot solids, liquids and gases - a scientific practice that is used today. In 1859, he applied his discoveries to the light of the sun. After many years of study, Krichoff concluded that the sun is a hot liquid sphere covered by an atmosphere of gases.[95] Ten years later in 1869, using Krichoff's spectrum analysis, Lockyer and Frankland discovered that an element exists in the sun's atmosphere that had not been discovered on earth, which they called helium. Thirty years later, helium was discovered on earth. This gives us an idea of how correct those scientists were in their discoveries. After analysis of the composition of the sun's atmosphere, Krichoff, together with Heidelberg and Bunsen, identified the following elements in the atmosphere of the sun: sodium, calcium, barium, strontium, magnesium, copper, iron, chromium, nickel, cobalt, zinc, and gold. Later, hydrogen gas was added to the list by scientists such as Angstrom.[96]

The heavy elements that the scientists found in the sun's atmosphere point to the existence of much heavier elements deep below its surface. This is because the heavier elements will naturally sink below the lighter ones, in the way that a stone dropped into the sea will sink to the bottom. On the other hand, at very high elevations, the atmospheres of the sun and planets have very light elements such as hydrogen and helium gas. We know that the surface of the sun has a very high temperature and that its surface must either be in the form of liquid or gas. The latest spectrum analysis of the

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[95] *Van Nostrand's Scientific Encyclopedias*, Sixth Edition, Van Nostrand Reinhold Company, (1983), p. 2718.

[96] *Van Nostrand's Scientific Encyclopedias*, Sixth Edition, Van Nostrand Reinhold Company, (1983), p.2718.

composition of the sun's atmosphere has identified about 65 non-radioactive elements, such as iron, nickel, titanium, sodium, calcium, barium, strontium, magnesium, copper, chromium, lead, cobalt, zinc, vanadium, Zirconium, cerium, scandium, silver, silicon, hydrogen, aluminium, tin, rhodium, mercury, tungsten, and others.

If the atmosphere of the sun is composed of heavy elements such as lead, silver, and copper, one can only imagine how heavy the elements deep below the surface must be. The law of gravity tells us that the centre of the sun must be made of heavy elements with a high atomic mass, while its surface is made of elements that have a much lower atomic mass. The periodic table of the elements shows that the elements with the highest atomic mass are radioactive. The core of the sun must, therefore, be made of radioactive elements. This enormous energy, including the heat energy that is generated by massive amounts of radioactive elements that exist inside the sun, plus the hot, turbulent ocean-like liquid gases over the surface that create the waves, vibrations, friction and heat, can explain why the sun is a source of light, heat, and other radiation. It also explains why the sun has given energy at a steady rate for millions of years.

However, some astronomers have a different explanation. Despite the fact that scientists analysing the atmosphere of the sun have discovered 65 elements and only years later, small traces of hydrogen and helium, theoreticians have suggested that hydrogen and helium atoms make up 99.9% of the volume of the sun. They believe that the sun gives light and heat because hydrogen is being converted into helium. Theoreticians claim that "*The changing of hydrogen into helium in the sun results in the release of the sun's energy in the form of heat and light.*"[97]

If this idea were true, then during the millions of years that the sun has existed, all of its mass and at least most of its atmosphere should have been converted into helium. The fact that hydrogen and helium constitute a small percentage of the atmosphere of the sun lead us to the understanding that the idea could be false.

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[97] The World Book Encyclopedia, (1982), V. 18, p.784d.

In contrast, the presence of a very large amount of radioactive atoms inside the sun is a sufficient and plausible explanation for the sun to produce its great energy.[98] If one studies the characteristics of radioactive elements, one finds that these elements naturally radiate heat, as well as x-rays and gamma rays. In fact, 10 percent of the heat energy that nuclear generating reactors need in order to produce electricity is supplied by the presence of a relatively small amount of radioactive elements. Imagine how much energy and heat the sun could produce, and for how great a duration of time, if a large percentage of its mass was composed of radioactive elements. Some of these elements could be so heavy and radioactive that not even a minute amount of it could be found on earth. Imagine, further, that the heat energy produced by the radioactive elements at the sun's core rises to the surface of the sun, and added to this heat is the heat generated by layers upon layers of more radioactive elements rising to the surface. How high could the temperature reach? This explains why the sun gives such a steady rate of energy. At a very high atmospheric pressure, any gas will convert to a liquid. This suggests, then, that the surface of the sun must be an ocean of hot liquid, and naturally, such a hot ocean must be an extremely turbulent one that creates friction and heat.[99]

Given the fact that radioactive elements are heavy elements with a high atomic mass, then one can conclude that the average density of the sun must be much higher than that of the Earth. Just as the average density of the Earth is much higher than the moon,[100] similarly, the average density of the sun must be much higher than the planets that revolve around it. This also means that the traditional scientific calculation of the sun's mass must be incorrect and it should be much higher. To see the reason why, let us study how the mass of the sun was calculated.

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[98] For a detailed discussion of the subject, see Bahram Katirai *Revolution in Physics*, Noor Publishing company, (1997).

[99] For further information see: Bahram Katirai, *Revolution in Physics*, Noor Publishing company, (1997).

[100] The mean density of the earth is 5.519 g/cm^3 and the moon is 3.34 g/cm^3 (Van Nostrand's Scientific Encyclopeadia (Sixth Edition), p. 2249 and p. 2251.)

In 1798, Sir Henry Cavendish devised the universal gravitational formula, which is utilized to calculate the mass of the sun. Cavendish found the value for the universal gravitation by measuring the force between two objects of a known mass in a laboratory. However, Cavendish's formula should not have been used alone to calculate the mass of the sun, because it was based on the gravitational forces between two objects that were not spinning. In the case of the sun, we know it is spinning; and its spin must be creating the solar wind.[101] It is known that the solar wind (the magnetic wind) moves away from the sun in a spiral motion and blows at a speed of 500 km./sec. toward the earth. The force of the magnetic wind, then, must cancel most of the sun's gravitational force. Were it not for the solar wind, the earth and all the planets in the solar system would have collapsed into the sun in a relatively short period of time. The force of the solar wind, plus the centrifugal force resulting from the orbital motion of the planets, keep the planets from being drawn into the sun. Physicists did not bring into account the force of the solar wind when calculating the mass of the sun. It is a gross error, because the force is so great that it cancels at least 90 percent of the sun's gravitational force. In other words, the actual mass of the sun must be far greater than what astronomers have traditionally calculated.

Here a serious question arises: if the mass of the sun is far greater than previously calculated, then why are the calculations regarding the orbits of the planets correct? The reason is simple: astronomers first determine the period of orbit of the planets by observation, then they calculate the relative mass of one against the other. They never do the reverse. The mass thus calculated fits only that particular observation. To see how wrong the calculations have been regarding the masses of the planets in our solar system, have a look at the densities (mass per volume) attributed to the planets.

First of all, the mass of all the planets calculated has led to the belief that among all the objects in the solar system, including the sun and all the planets and their satellites, the Earth happens to have

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[101] For further information see Revolution in Physics by Bahram Katirai.

the highest density. Isn't it odd that among all the objects in the solar system, our own planet should have the highest density?

Incorrect mass calculations for all the large planets have led scientists to believe that they are mainly composed of hydrogen and helium gases. Obviously, there is something wrong with these calculations. Regarding the sun, they also believe that it is composed of helium and hydrogen gases and to see why this cannot be correct, let us look at stars to see how they create their planets.

In the previous chapter, we saw that some stars, as they become very large, give off enormous clouds of dust and minerals which later form a ring. In time, these clouds condense and create planets. The photographs in Chapter 12 speak for themselves. They show that the clouds are not hydrogen gas, but rather, minerals similar to the composition of our own planet. No planet could be formed out of hydrogen. One does not need to be an astronomer to see that the mass of dust clouds that the stars give off cannot be composed of hydrogen gas. The formation of planets, such as the Earth from clouds of dust and minerals, prove that the stars are not composed mainly of hydrogen.

If it is understood that the sun is composed of very heavy elements that are radioactive, then a rough calculation will show that the average density of the sun must be at least 3.5 times higher than the earth.[102] Since the sun's volume is 1,300,000 times the earth, its mass must then be at least 4,550,000 times the earth.

To see how large the mass of the sun is, let us assume that the sun is the centre of the Milky Way. Then, let us estimate how many objects, such as luminous spheres, planets, and asteroids could be circling around it. Let us consider that the sun's mass is equal to the rest of the Milky Way. Calculation shows that in the Milky Way, there could be one million planets similar to Mercury, one million planets similar to Mars, one hundred thousand planets like Earth, hundreds of millions of asteroids, each hundreds or even thousands of kilometres wide, fifty planets or luminous spheres as large as

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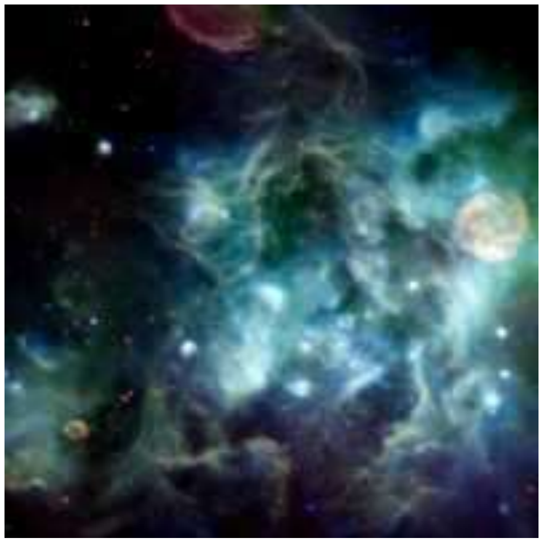
[102] The author believes that the density of the sun could be hundreds of times higher than the earth.

Jupiter, plus clouds, rocks, minerals, and gas filling all the spiral arms belonging to the Milky Way. The total mass of all the planets, luminous spheres, asteroids, and clouds combined would still be less than the mass of the sun. The above simple calculation gives an idea of how large the sun is, and that its mass, in reality, is large enough to be the centre of the Milky Way. This is a very large galaxy.

In fact, if we carefully study the Milky Way, we find that in its plane, there are no more than several thousand objects that could actually be called planets. As demonstrated in the preceding text, the idea that there exists hundreds of billions of stars is an illusion that is based on the idea that every point of light is a star. In reality, it is much more likely to be a planet, planetoid, asteroid, or clouds of dust and minerals.

Are there that many planets or planetoids in the Milky Way? The answer is no. If one looks at the sky on a clear night, there appear to be millions of stars visible to the naked eye. In reality, the number of visible stars is only 2,800. Many star gazers have gone through the trouble of counting the stars they could see with a naked eye and have come to the conclusion that the total number that could be seen all around the earth is about 6000. Astronomers claim that there are four hundred billion stars in the Milky Way. On the contrary, when we look at many photographs of the Milky Way, we see that all of them show a mass of clouds with only a small number of objects in between the clouds. The following photograph is a good example.



This radio astronomy image from the Canadian Galactic Plane Survey (CGPS), reveals the Cygnus region in our own Milky Way. There are about 68 objects visible among the clouds.

The Width of the Milky Way

It is believed that the Milky Way has a width of 2,000 – 6,000 light years, with a diameter of 100,000 light years. Although today, astronomers believe in Shapley's idea, which states that the sun is located 26,000 light years from the centre of the Milky Way. Astronomers all agree that the sun is located somewhere in the middle of the width of the Milky Way.

Let us investigate to see if the Milky Way could be 2,000 – 6,000 light years wide.

Assume that the Milky Way is 2,000 light years in width, as astronomers agree. We know that on a clear night with our naked eye, we can see the plane of the Milky Way as a band of misty light. If it were 2,000 light years in width, we should not be able to see any part of it. Looking toward the plane of the Milky Way or away from it, the distribution of stars should appear the same. In other words, if the width of the Milky Way were 2,000 light years, then we would not be able to distinguish where the plane of the Milky Way is located.

Figure 12 shows the Milky Way in cross section. We are located at point near the sun, meaning that looking up or down, the end limit of the Milky Way would be 1,000 light-years away.

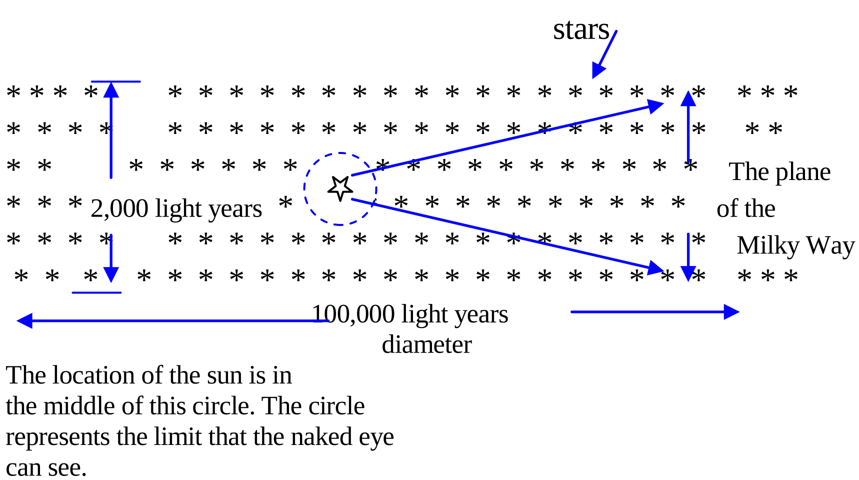


Fig. 12

Astronomers believe that the sun from a distance greater than 50.71 light-years would not be visible to the naked eye.[103] The distance of 1,000 light years is so great, that no star could be visible to the naked eye even it were thousands of times brighter and larger than the sun. If the suggestion that the 2,000 light year width of the Milky Way were true, then the distribution of stars visible to the naked eye would be the same in all directions. We would not be able to see the configuration of the plane of the Milky Way in any direction. In other words, we would not see the plane of the Milky Way. The fact that our naked eye can see the plane of the Milky Way as a band of misty light so clearly proves that the width of the Milky Way must be much less than 2,000 light years.

The concept that all the objects in the Milky Way are planets or asteroids reflecting sunlight leads us to understand that all of them must be circling the sun. The greater a planet's distance from the sun, the more slowly it moves. Pluto takes about 250 years to complete its orbit. This means that the most distant objects circling the sun should not be too far away from Pluto. A rough calculation would show that these objects are moving slowly and would take many thousands of years to complete their orbit around the sun. This is exactly what the Dutch-American astronomer Adrian Van Maanen (1884-1946) discovered regarding the rotation of the Andromeda galaxy. He found that Andromeda completes its rotation in less than 1,000 years.[104]

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[103]George O. Abell, *The Realm of Science* , Touchstone Publishing Company, (1972), v. 11, p. 31. See also Asimov Isaac *The exploding Suns*, Truman Talley Books, (1985), p.45.
The inverse square law gives us a distance of 32 x 1.58 = 50.71 light-years at which the sun would be barely visible to the naked eye.

[104] See internet: Adrian Van Maanen and the Rotation of the Spiral Nebulae

Chapter 14
The Distance at Which the Sun Would Become Invisible

In astronomy, the distance at which the sun would become invisible to the naked eye is considered an important yardstick by which to evaluate relative distances of stars and galaxies.

It is regarded as an established fact that the sun, at a distance of 32 light-years[105], appears as a star of fifth magnitude.[106] In other words, the sun appears 2.512 times brighter than a star that is barely visible to the naked eye. This means that the sun from a distance of 50.71 light-years would be barely visible to the naked eye.[107] This also means that the sun from a distance greater than 50.71 light-years would not be visible to the naked eye.

Let assume that astronomers were correct and that the sun from a distance of a distance greater than 50.71 light-years would not be visible to the naked eye. In chapter one we saw that the Hubble telescope's range is only 357.14 times farther than that of the naked eye. This means that the sun from a distance of 17917 light years would not be visible through the Hubble telescope. Using a digital camera at the eyepiece of the Hubble telescope the range of view could be increased up to ten times. The means that maximum range of a telescope as large as the Hubble is about 180,000 light years. In the previous chapter we saw that the sun is the centre of a large

[105]George O. Abell, *The Realm of Science* , Touchstone Publishing Company, (1972), v. 11, p. 31. See also Asimov Isaac *The exploding Suns*, Truman Talley Books, (1985), p.45.

[106] Magnitude is a scale used since ancient times to compare the brightness of one star to another. According to this scale, the sun has a magnitude of –26.5. Reverse and negative values in a scale are not natural and not easy to understand. Unfortunately, astronomers have adopted this scale, which merely creates confusion. A case could easily be made that it would make more sense to use instead a simple comparison such as the star A is 50 or 1000 times brighter or fainter than B, a star that is barely visible to the naked eye.

[107] The inverse square law gives us a distance of 32 x 1.58 = 50.71 light-years at which the sun would be barely visible to the naked eye.

galaxy. If the centre of a galaxy, which is its brightest section, would not be visible by a large telescope how could astronomers claim that they can see galaxies 14 billion light years away that they claim is located at beginning of the Big Bang? Knowing the range of a large telescope, the claim is difficult to accept.
Furthermore, the claim that the sun at a distance of 32 light-years[108], appears as a star of fifth magnitude is also doubtful. The following studies raise doubts about this particular claim.

Scientists using highly reliable instruments have found that the luminosity of the sun is equal to 3.83×10^{26} watts. Conducting extensive experiments, this calculation has been confirmed as correct.[109]

Having agreed that the luminosity of the sun is about 3.83×10^{26} watts, the next step would be to determine at what distance its apparent luminosity becomes so faint that a naked eye cannot see it. To do so, the author conducted a simple experiment. A very small

[108] George O. Abell, *The Realm of Science* , Touchstone Publishing Company, (1972), v. 11, p. 31. See also Asimov Isaac *The exploding Suns*, Truman Talley Books, (1985), p.45.

[109] A simple experiment conducted by Laurence A. Marchall, a teacher at Gettysburg College, which directly gives a rough idea about the luminosity of the sun. For this experiment one simply needs a 100-watt light bulb, a wax photometer made of two pieces of wax separated by a piece of tinfoil and a measuring rod. In order to find the luminosity of the sun we can place a 100-watt light bulb and the sun on opposite sides of a wax photometer and vary the distance from the photometer to the 100-watt bulb until the brightness of bulb at the photometer is the same as the brightness of the sun at the photometer. It was found that the bulb at a distance of about 8cm equals the sun in brightness. Since we have the distance of the photometer to both the light bulb and the sun (1.5×10^{13}cm), using *the inverse square law* we can calculate the luminosity of the sun by the following formula.
The formula simply states; the luminosity of the sun divided by the square of its distance to the photometer, is equal to, the luminosity of the bulb divided to the square of its distance to the photometer.

$$L\ \text{sun} / d^2\ \text{sun} = L\ \text{bulb} / d^2\text{bulb}$$

$$L\ \text{sun} / (1.5 \times 10^{13}\text{cm})^2 = 100\ \text{watt} / (8\ \text{cm})^2$$

$$L\ \text{sun} = 3.5 \times 10^{26}\ \text{watts}$$

This is an approximate value for the luminosity of the sun. However, a more accurate value obtained by highly accurate photometers is 3.83×10^{26} watts.

artificial star (diameter 0.33 mm) was created. In a dark room at a distance of 1.3 meters it appeared very much like a star or planet.[110] Surprisingly, at a distance of only about 15 meters, the fibre tip was so faint as to be invisible to the naked eye.[111] The experiment gave us some idea about the limit of luminosity that the naked eye can see. Since the luminosity of the fibre tip in terms of wattage was unknown, it was not possible to calculate how faint its light appeared at the distance of 15 meters.

For the next experiment, a very small (1.7 mm x 3 mm) light bulb was found with wattage (0.0375-watt) determined by the manufacturer[112]. It was found that the light of the mini light bulb, outside the city and away from city light[113], in a dark and clear night, at the distance of 570 meters, appeared so faint that the naked eye could not see it. Knowing the actual luminosity of the light bulb and the distance that it became invisible, by using *the inverse square law of light,* we can calculate at what distance a 100-watt light bulb would become equally faint.

$$0.0375 \text{ watts} / (570 \text{ metes})^2 = 100 \text{ watts} / d^2$$

$$d = 29{,}434 \text{ meters or } 29.434 \text{ km}$$

This simple calculation indicates that a 100-watt light bulb from a distance of 29.434 kilometres would not be visible to the naked eye.

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[110] In order to make the small star, a piece of fiber optic was used that had a diameter of 0.33 mm and length of several centimetres. One end of the fiber optic was illuminated by a flashlight so that the light from the other end of the fibre appeared as a small source of light similar to that of a star. The flashlight and parts of the fibre were covered with black tape so that only the light from the tip of the fibre optic was visible.

[111] The experiment was carried out in a large and dark room. Considering the fact that the distance was relatively very short, that the room had been vacant for some time, that no dust or particle was floating in the air, that sufficient time was given for the eyes to get used to the dark, the result of the experiment, as far as the sensitivity of the eye to the light of the fiber tip is concerned, was taken to be roughly accurate.

[112] Mini Lamp: 1.5 volts, 25mA, its size; 1.7 mm x 3 mm. Manufactured in China and distributed by Orbyx Electronics, LLC.

[113] The experiment was carried out in Botswana by Mr. Ghodrati and his team.

Since the luminosity of the sun is 3.83×10^{26} watts, using the inverse square law we can determine at what distance the light of the sun becomes equally faint.

$$0.0375 \text{ watt} / (570 \text{ meters}) = 3.83 \times 10^{26} \text{ watt} / d^2 \text{ meters}$$
$$d = 5.76 \times 10^{16} \text{ meters or } 5.76 \times 10^{13} \text{ km}$$

Since light travels 300,000 km per second then we have:

$$d = 192{,}015{,}900 \text{ light-seconds} = 6.09 \text{ light-years}$$

This simple experiment demonstrates that the sun from the distance of 6.09 light-years would not be visible to the naked eye. On the other hand some have claimed that the sun from a distance of 32 light years would be clearly visible and that the sun from a distance of 50.71 light-years would be barely visible. The distance 50.71 is 8.32 times farther than 6.09 light-years. According to the *inverse square law* for the sun to be barely visible at 50.71 light-years its light must be at least $(8.32)^2$ or 68.59 times stronger. If this truly were the case, then either the physicists who provide measurements of the sun luminosity are routinely incorrect and off by 6,859%, or else that the manufacturer-indicated properties of the mini-light bulb used in this experiment were off by 6,859 %.

Obviously, neither of these could be true. The logic of the numbers indicates that the distance of 50.71 light-years that some astronomers have suggested could be wrong. The reason for the possible error is that the distance of 50.71 light-years was obtained by indirect methods incorporating assumptions that admittedly[114] could be erroneous.

A previous chapter examined how a large telescope such as the Hubble, enables observers to see 357.14 times farther than the naked eye. Since the sun from a distance of 6.09 light-years would not be visible to the naked eye, then from an even farther distance of 2175 light-years (6.09 light-years multiplied by 357.14) it would not be visible even with the Hubble telescope.

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[114] Hoyle Fred, *Astronomy*, Crescent Books, Inc. p. 226.

It must be noted that the above calculation does not include long exposure photography.[115] Even if this technique is applied using a sensitive digital camera mounted on a telescope, the limit may be increased several times, that is to say 12,000 light-years.[116]

This is in contrast to a belief of some astronomers that stars similar to the sun, from distances of millions of light-years, are visible through the Hubble telescope.[117]

In the previous chapter evidence were presented that the sun is the centre of the Milky Way.

It is regarded as an established fact that the sun, at a distance of 32 light-years[118], appears as a star of fifth magnitude.[119] In other words, the sun appears 2.512 times brighter than a star that is barely visible

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[115] By allowing the light of stars that are very faint or invisible to fall on a film for a long period of time, the images of some may become visible on the film.

[116] According to astronomers, a 200-inch photographic limit is 30 times greater than a 200-inch visual limit. This means that according to the inverse square law, using photography increases the viewing range of a telescope by 5.47 times. Since our calculations showed that the Hubble telescope's visual limit was 2175 light-years then its photographic limit would be 5.47 x 2175 or 11,897 light-years. See O. Abell, *The Realm of Science*, Touchstone Publishing Company, Kentucky, Volume 11, p. 30.

[117] For example, in early 1920, Edwin Hubble, using a new telescope, was able to resolve the outer part of some galaxies as collections of stars and identified some as being Cepheid variables. Hubble asserted that those galaxies are millions of light-years away. See Asimov Isaac *The exploding Suns*, Truman Talley Books, (1985), p. 92.

[118] George O. Abell, *The Realm of Science* , Touchstone Publishing Company, (1972), v. 11, p. 31. See also Asimov Isaac *The exploding Suns*, Truman Talley Books, (1985), p.45.

[119] Magnitude is a scale used to compare the brightness of one star to another. According to this scale, the sun has a magnitude of –26.5. Reverse and negative values in a scale are not natural and not easy to understand. Unfortunately, astronomers have adopted this scale, which merely creates confusion. A case could easily be made that it would make more sense to use instead a simple comparison such as the star A is 50 or 1000 times brighter or fainter than B, a star that is barely visible to the naked eye.

to the naked eye. This means that the sun from a distance of 50.71 light-years would be barely visible to the naked eye.[120]

[120] The inverse square law gives us a distance of 32 x 1.58 = 50.71 light-years at which the sun would be barely visible to the naked eye.

Chapter 15
The Big Bang Theory

The Big Bang theory is based on the concept that the universe was created by a massive explosion, and as a result, stars were created. These stars continue to move away from the centre of that explosion. According to this theory, billions of years ago the galaxies in the universe were all in one location.[121] It is now presumed that the more reddish a galaxy looks, the faster it is moving away from the original point of the explosion.

The redness aspect of the theory is based on the observation of spectral lines of distant galaxies. During the early 1900s, American astronomer Vesto Melvin Sliper obtained spectra of distant galaxies and found that most had red shifts,[122] appearing to have a reddish colour. In 1917, a former mule driver named Milton Humason, started to work at Mount Wilson as a janitor. He soon began to assist with observation.[123] He noticed that the fainter galaxies tended to be more reddish, thus having a larger red shift. In other words, he noticed that the greater a galaxy's distance, the more reddish it appeared. Later, it was found that the amount of red shift of a galaxy was directly proportional to its distance from us, therefore, the greater the distance, the greater the red shift. For example if the distance of a galaxy is doubled, the red shift is also doubled.

Since the light of a receding celestial object will have a red shift (Doppler effect), Humason interpreted these observations to mean that all the distant galaxies are receding from us, and that the more distant a galaxy is, the faster it is moving away.

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[121] *The Realm of Science*, Touchstone Publishing Company, Louisville, Kentucky,
v. 12, p. 140.

[122] Red shift means decrease in frequency or appearing to be more reddish in colour.

[123] Friedman Herbert, *The Amazing Universe*, National Geographic Society, (1975), p. 19.

The idea that the galaxies farther away from us are receding faster led Edwin Hubble to the concept of an expanding universe.[124] The idea that galaxies are moving away from us led to the idea that all the galaxies were once in the same location as the earth. Since this would mean that we are at the centre of the universe, an idea reminiscent of Aristotle's ridiculed idea, Hubble tried to avoid this inference. He came up with the fantastic assumption that all other galaxies are moving away from each other. In other words, all galaxies are fleeing from one another and if we moved away to any remote place in the universe, we would find that the greater the distance of the galaxy, the greater is its red shift. That is, all the distant galaxies are moving away from that one location. Furthermore, one would find that the greater the distance a galaxy is from that location, the faster it is moving. Based on this, they assumed that all galaxies at one time must have been in one location and that an immense explosion occurred (the 'Big Bang') that sent all debris, including galaxies, flying apart.

Based on the red shift of spectral lines, astronomers believe that, *"…The Virgo cluster at a distance of about 30 million light years is receding at 750 miles per second; the Corona Borealis, at a distance of 520 million light years, at 13,400 miles per second; and the Hydra cluster, at 1400 million light years, at 38,000 miles per second."* [125]

By plotting the recessional velocities of these galaxies against their respective distances from us, the astronomers found a straight line. This meant that for every increase of a million light years in distance, the recessional velocity increased by about 25 miles per second. In other words, "*a galaxy at 10 million light years recedes at 250 miles per second; a galaxy at 100 million light years at 2,500 miles per second, and so on.*"[126] As distance

[124] Friedman Herbert, *The Amazing Universe*, National Geographic Society, (1975), p. 43.
[125] *The Realm of Science,* Touchstone Publishing Company, Louisville, Kentucky, v. 12, p.139.
[126] *Ibid*, v. 12, p.139.

doubled, velocity doubled. This further meant that galaxies are accelerating away from us at a steady rate.

The following reasons can prove that all of the above interpretations and theories are erroneous. First of all, let us explore what Humason discovered in simple words. He found that if the distance of a galaxy doubles, the amount of red shift also doubles. Therefore, the amount of red shift is directly proportional to the galaxy's distance. This shows that the longer the light path is, the greater the red shift is. In other words, the space itself is causing the red shift.

Red shift actually means an increase in wavelength or a decrease in frequency.[127] Now comes the question: how could the frequency of light decrease by travelling through space? The answer is very simple. When we talk about the frequency of light seen by an observer, we mean the number of waves that reach the observer's eye in a second. The question, therefore, can be asked in a different form: how could the number of waves that reach the observer's eye decrease by travelling through space? First of all, we know that the longer light travels through space, the weaker it becomes. Light, after travelling a great distance, loses some of its weaker waves. The greater the distance the light travels, the greater the number of waves lost. The loss of the wave means a decrease in the frequency.

To understand this reasoning, we know that a source of light generates many billions of waves in one second. Not all these waves have the same strength. Some are very strong, some are not so strong, some are weak and some are very weak. Not all of them can travel through a great length of space. The weaker waves eventually die, and only the strong ones will reach the observer's eye. The light at its source having a certain number of waves in a second, reaches an observer with a lower number of waves per second. Bear in mind that the number of waves in a second is called the frequency.

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[127] In physics there is a well known formula (**c = w** x **f**) that says that the speed of light is equal to its wavelength multiplied by its frequency. Since the speed of light is constant, then the increase in the wavelength means a decrease in the frequency.

Therefore, a reduction in the number of waves per second means a reduction in the frequency or the red shift.[128] In brief, light with a certain frequency, after passing through space, will have a lower frequency or red shift by the time it reaches the observer's eye. To elaborate, considering that light waves are generated at the source, one must realize that there will be some variation between the waves. Some waves will be stronger than others while some will be weaker than others. When the distance the light travels is great, small variations between subsequent waves will make a difference. The weaker wave could die before reaching the observer, and the space could act as a filter allowing the stronger waves to reach the observer's eye. Since a line spectrum has many waves, only a percentage will pass through the space-filter to reach our eyes. It must be noted that the effect of space on light does not depend on the frequency of light, but rather, on the intensity of each wave. In other words, regardless of the frequency at the source, if a light wave is strong, it passes through space and if it is not strong, it dies within space. This explains why there is a relationship between the distance of a galaxy and the red shift. The greater the distance, the greater the filtering, or red shift effect. This further explains why the distance of a galaxy doubles, the amount of red shift also doubles.

This explains why we can easily detect the red shift for galaxies that are faint and distant. This also explains why the light of the distant, faint, city lights also appear more reddish than those that are nearby. If the city lights were viewed by a telescope from hundreds of times farther, the red shift would also become hundreds of times greater, and therefore, the red shift would be much more noticeable.

The idea that we are in a location in which all galaxies are accelerating away from us, and that if their distances from us are

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[128] The eye sees the different frequency of light as different colors. The lowest frequencies are deep red. If we increase the frequency of a light continuously, it will change in color from red to orange, then to yellow, then to green, and finally to blue. The increase in the frequency is called the blue shift. On the other hand, if we continuously lower the frequency of a blue light, its color finally becomes red and the lowering of the frequency is called the red shift.

doubled, their velocities are also doubled, does not make sense. This seems even less plausible when one considers that according to Hubble's theory, some distant galaxies are moving away so fast that their velocities are as great as $1/7^{th}$ of the velocity of light.

Let us assume that the idea of the Big Bang is true, and all the galaxies are moving away from the centre of the original explosion. All galaxies should be moving with a constant speed without acceleration. Acceleration needs an enormous amount of energy. Where would the galaxies have obtained such great energy? Unable to answer this question, those ascribing to Hubble's theory posited the existence of *dark matter,* which somehow causes the velocities of galaxies to double as their distances double. If we think about this, it follows that the dark matter itself must be accelerating. Where would the dark matter have obtained such great energy?

Finally, the assumption that all galaxies are moving away from all other galaxies would appear to have very little, if any, proof to support it. In fact, if we investigate the idea that all galaxies are moving away from all other galaxies, we would find that the idea could not be true. When Vesto Slipher studied the motion of the Andromeda galaxy, he realized that "*it is not moving away from us at all: it is coming toward us, and its light is blueshifted rather than redshifted*."[129] He further discovered that 4 out of 15 galaxies he studied were blue-shifted and coming towards us.[130]

Some physicists claim that the idea of an expanding universe is supported by mathematics. After examining the basis of their mathematics, it was noticed that all the calculations were based on the assumption that all galaxies must be moving away. The fact that galaxies did not need to have motion in order to have the red shift effect was not considered. The following is a summary of their reasoning:

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[129] See Internet: Discover Crisis in the Cosmos - recent observations cause cosmological dilemmas. By Sam Flamsteed, 1999.
[130] Friedman Herbert, *The Amazing Universe*, The National Geographic Society, (1975), p. 45.

> "*If we allow that the galaxies may move, changing their positions with time, but also assume that such motions must not destroy spatial homogeneity and isotropy, what motions of the galaxies can possibly take place? The answer can be worked out mathematically, and it turns out that the only permitted motion is precisely the motion of expansion envisaged above*."[131]

The Big Bang theory assumes that the whole universe is the result of an explosion. An explosion produces chaos and disorder, however, one can see from the microcosmic world of atoms to the macrocosmic system of stars is nothing but symmetry, beauty, law, and order and above all, the sign and glory of an almighty designer.

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[131]- Fred Hoyle, *Astronomy*, Crescent Books, Inc., p. 294