

# BIG BOOK OF THE COSMOS



# **Big Boo Cosmos**



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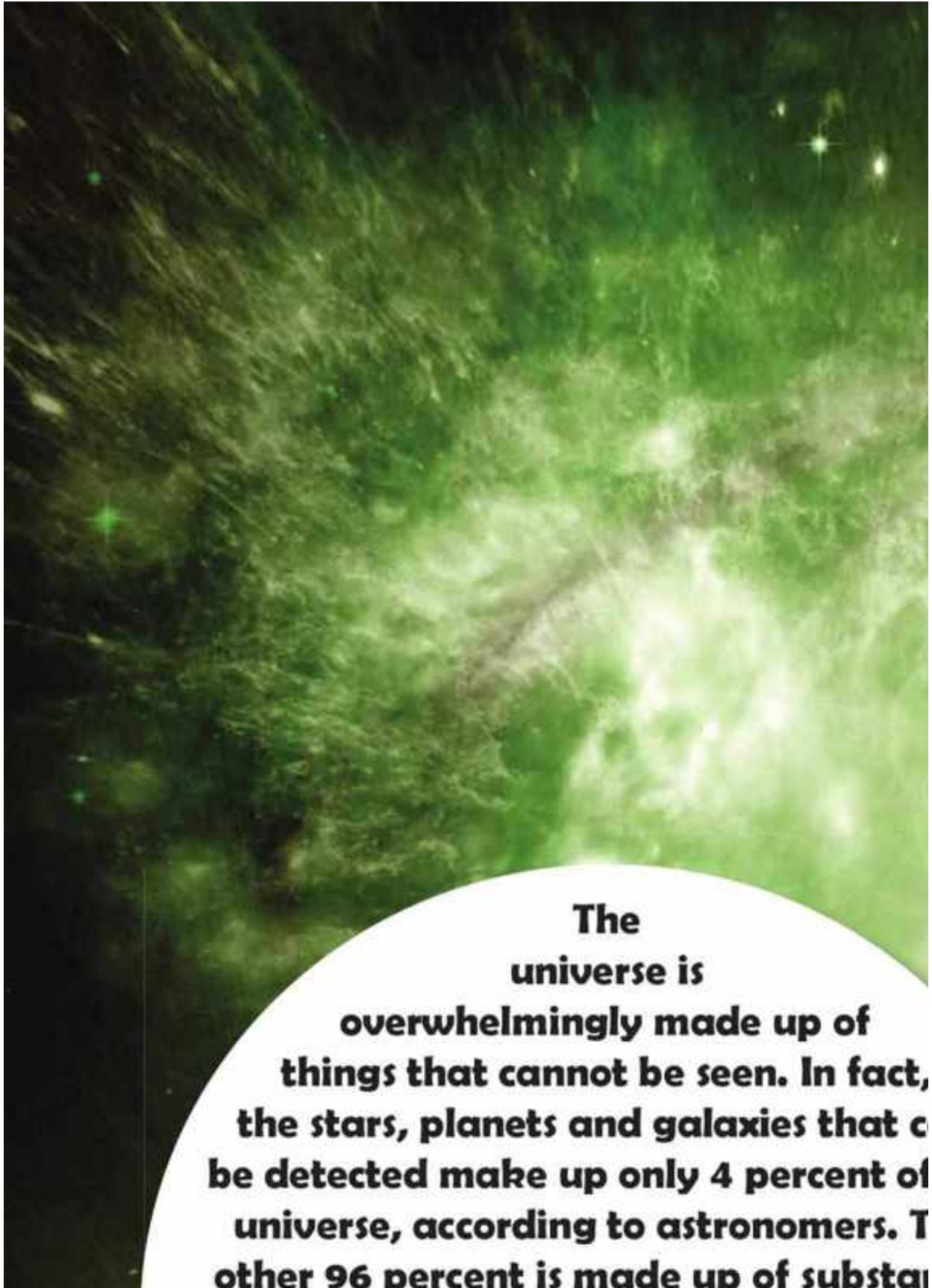


**The universe began with the Big Bang, and is estimated to be approximately 13.7 billion years old (plus or minus 130 million years).**

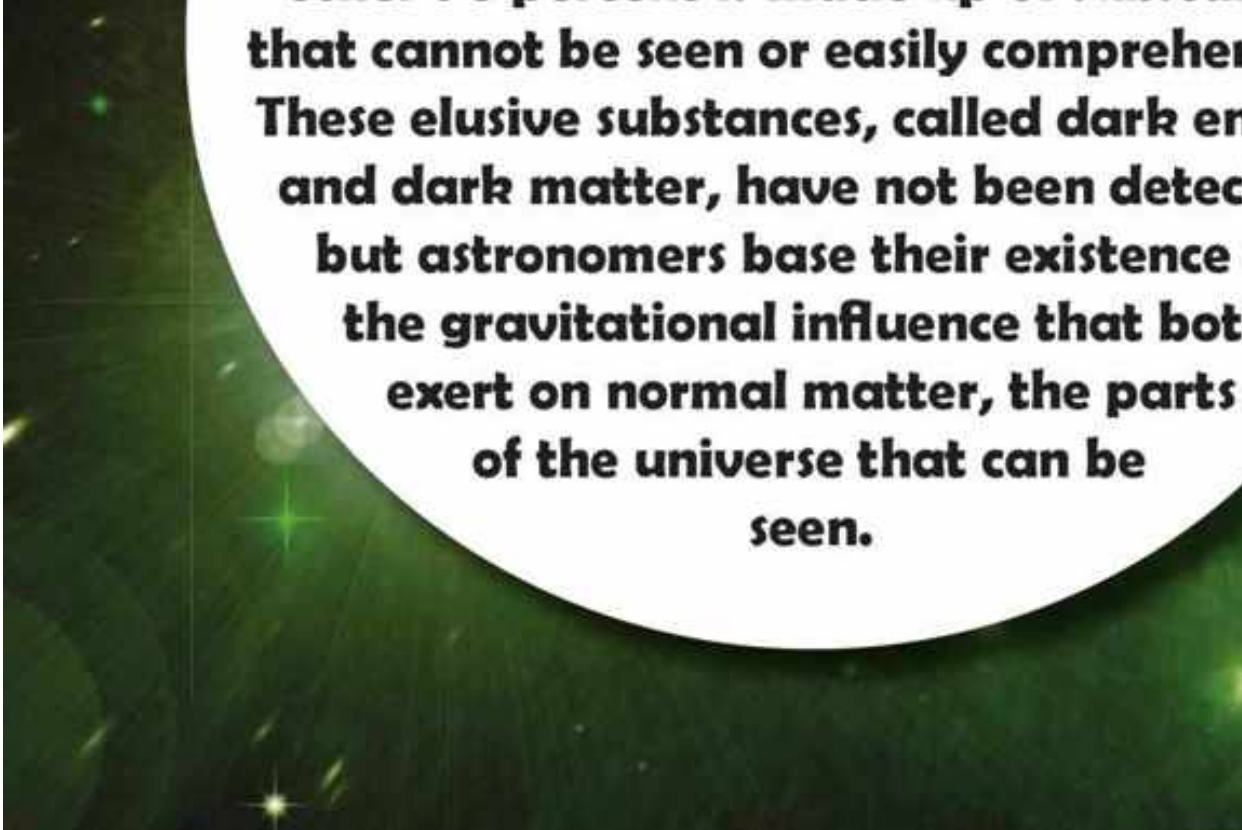
**the  
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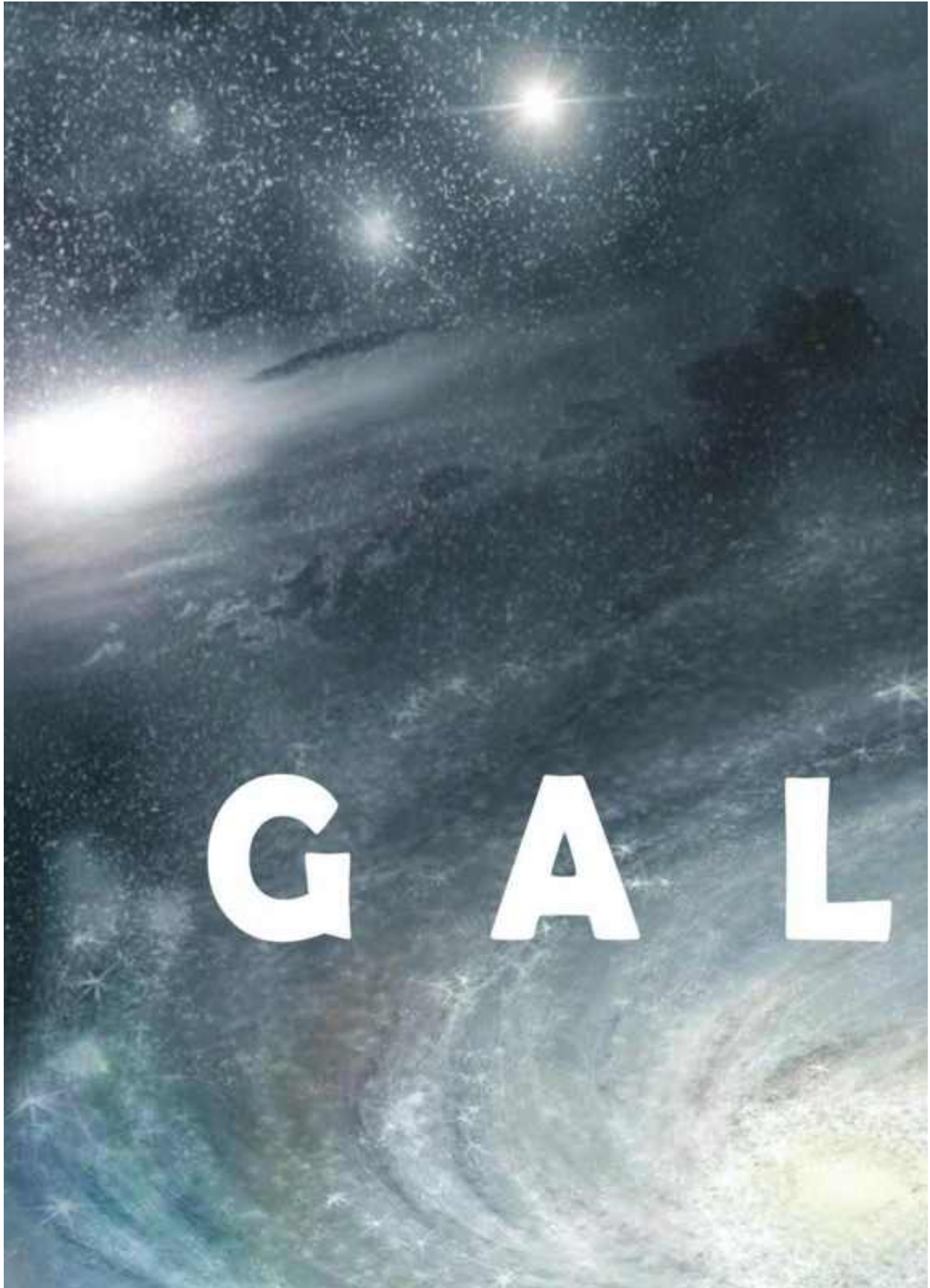




**The universe is overwhelmingly made up of things that cannot be seen. In fact, the stars, planets and galaxies that can be detected make up only 4 percent of the universe, according to astronomers. The other 96 percent is made up of substances**

The image features a dark green, starry background with a white circular area in the upper right quadrant. The text is centered within this white area. The text is in a bold, black, sans-serif font. The text reads: "that cannot be seen or easily comprehended. These elusive substances, called dark energy and dark matter, have not been detected, but astronomers base their existence on the gravitational influence that both exert on normal matter, the parts of the universe that can be seen."

**that cannot be seen or easily comprehended. These elusive substances, called dark energy and dark matter, have not been detected, but astronomers base their existence on the gravitational influence that both exert on normal matter, the parts of the universe that can be seen.**



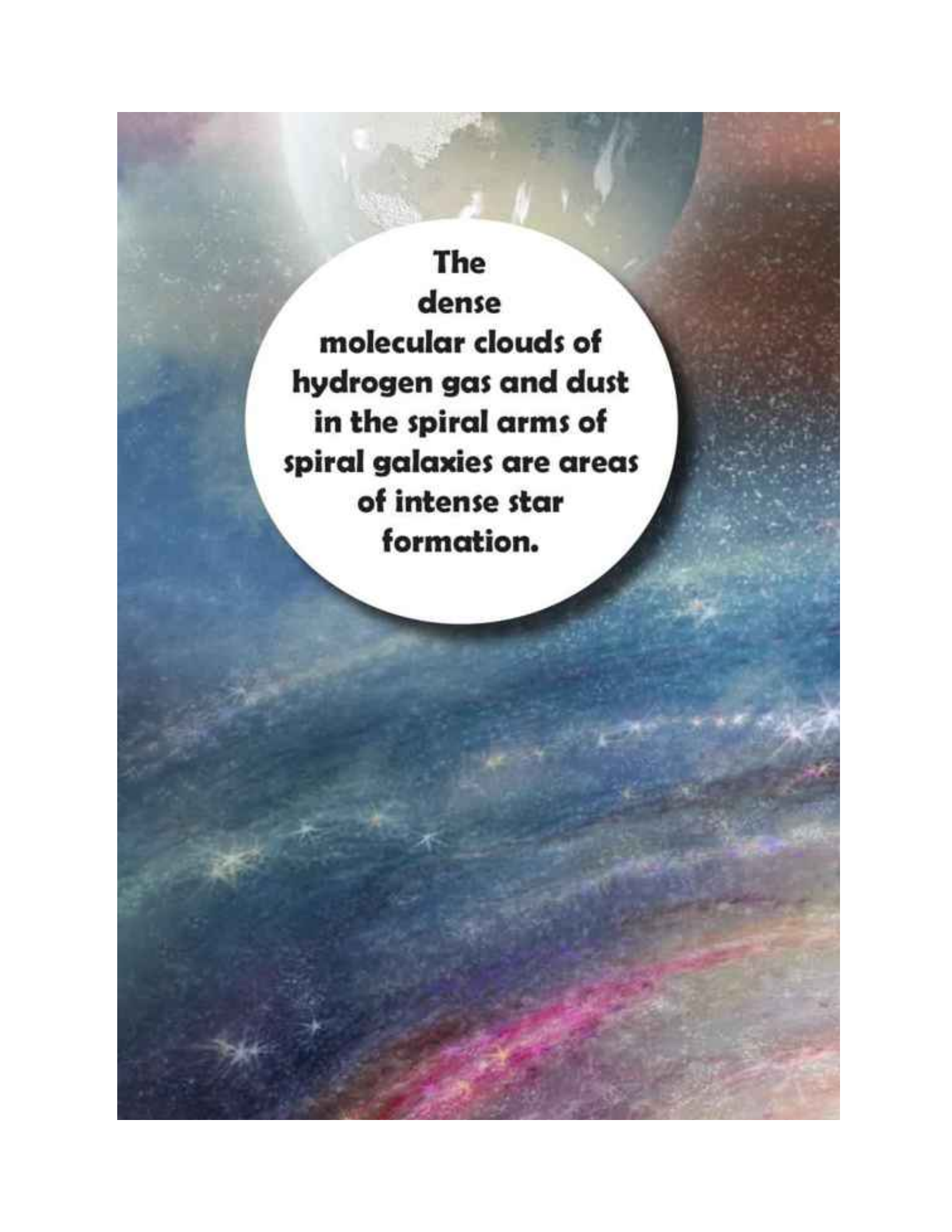




**A  
galaxy is a  
massive group of  
stars, star clusters,  
interstellar gas and dust,  
and dark matter which  
is all gravitationally  
bound together.**



**The  
word 'galaxy'  
is derived from the  
Greek word galaxias  
which means "milky", it  
is a reference to our own  
galaxy the Milky Way.**



**The  
dense  
molecular clouds of  
hydrogen gas and dust  
in the spiral arms of  
spiral galaxies are areas  
of intense star  
formation.**







**Our  
Solar System is  
located within the  
disk of the Milky Way  
Galaxy, around 27,000  
light-years from the  
Galactic Center of  
the galaxy.**



**Sup  
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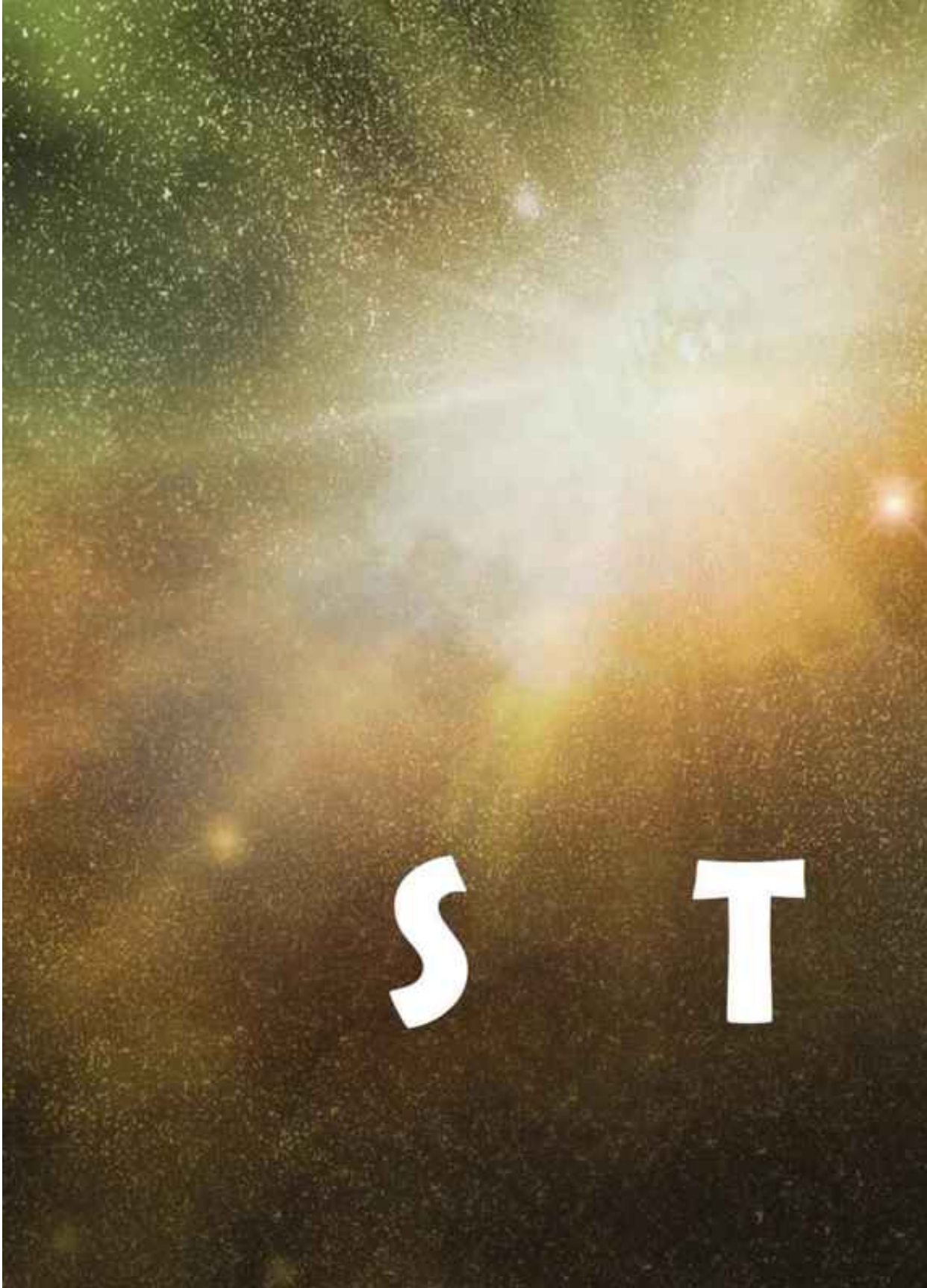






**Starburst is a name for galaxies that form a lot of new stars at a fast rate, usually after much molecular cloud is produced as two galaxies merge.**











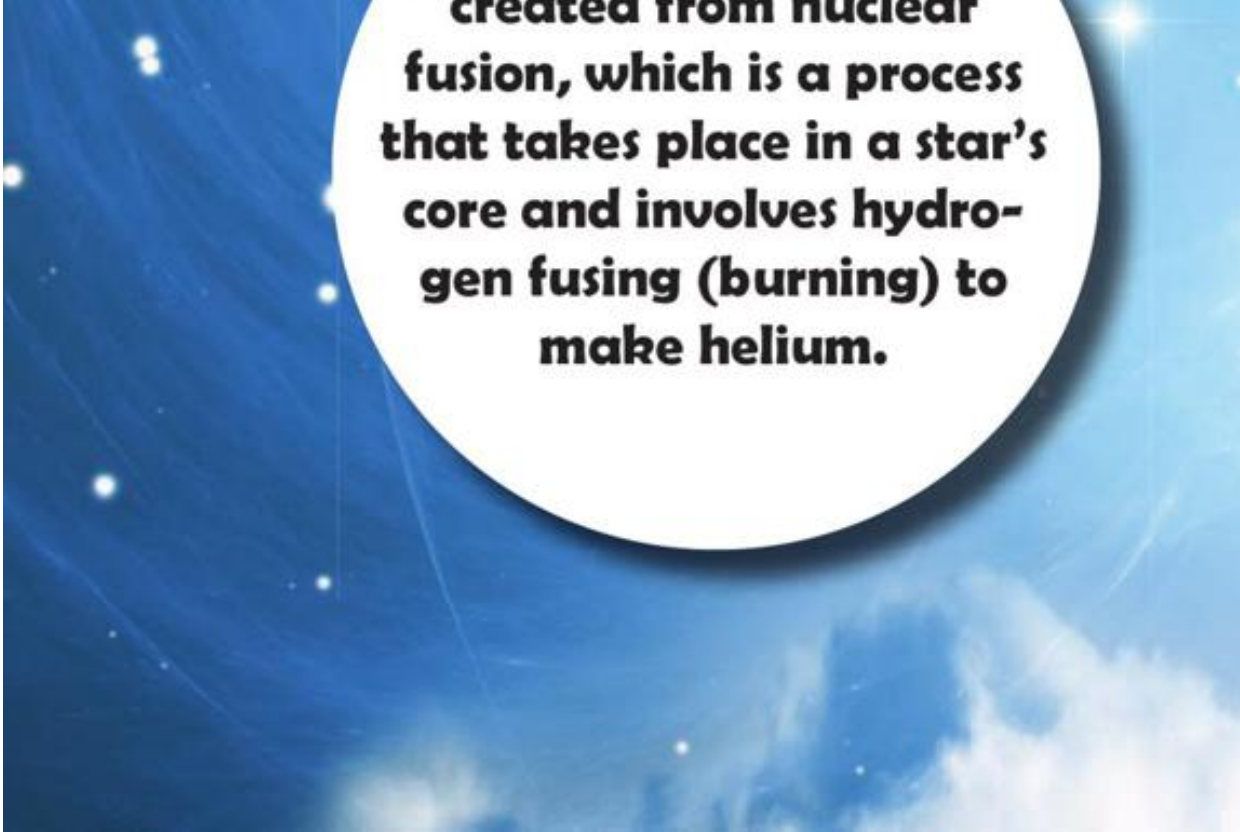
**Stars**



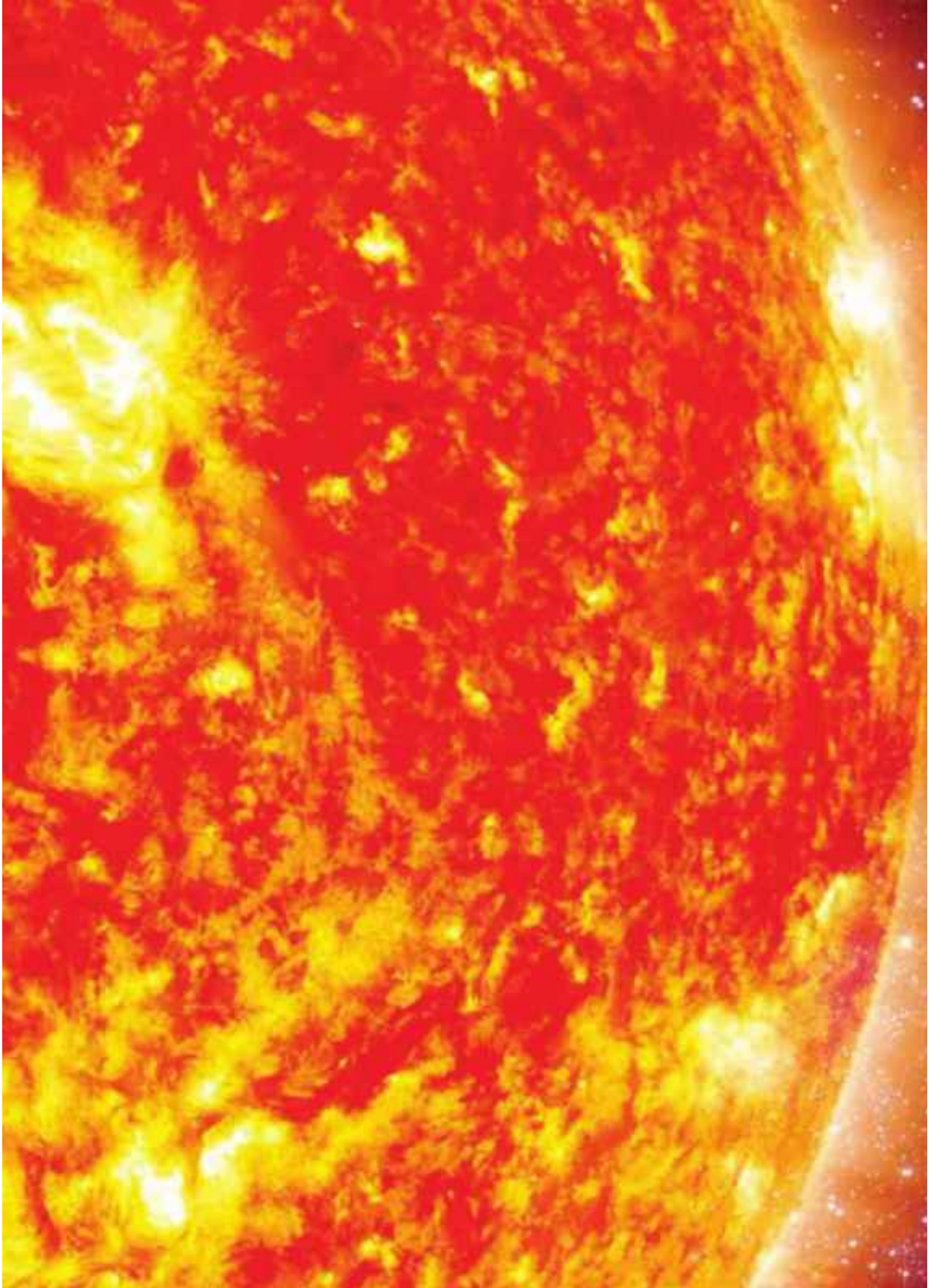
**are usually  
between 1 and 10  
billion years old. Some  
stars may even be close to  
the age of the observed  
Universe at nearly 13.8  
billion years old.**



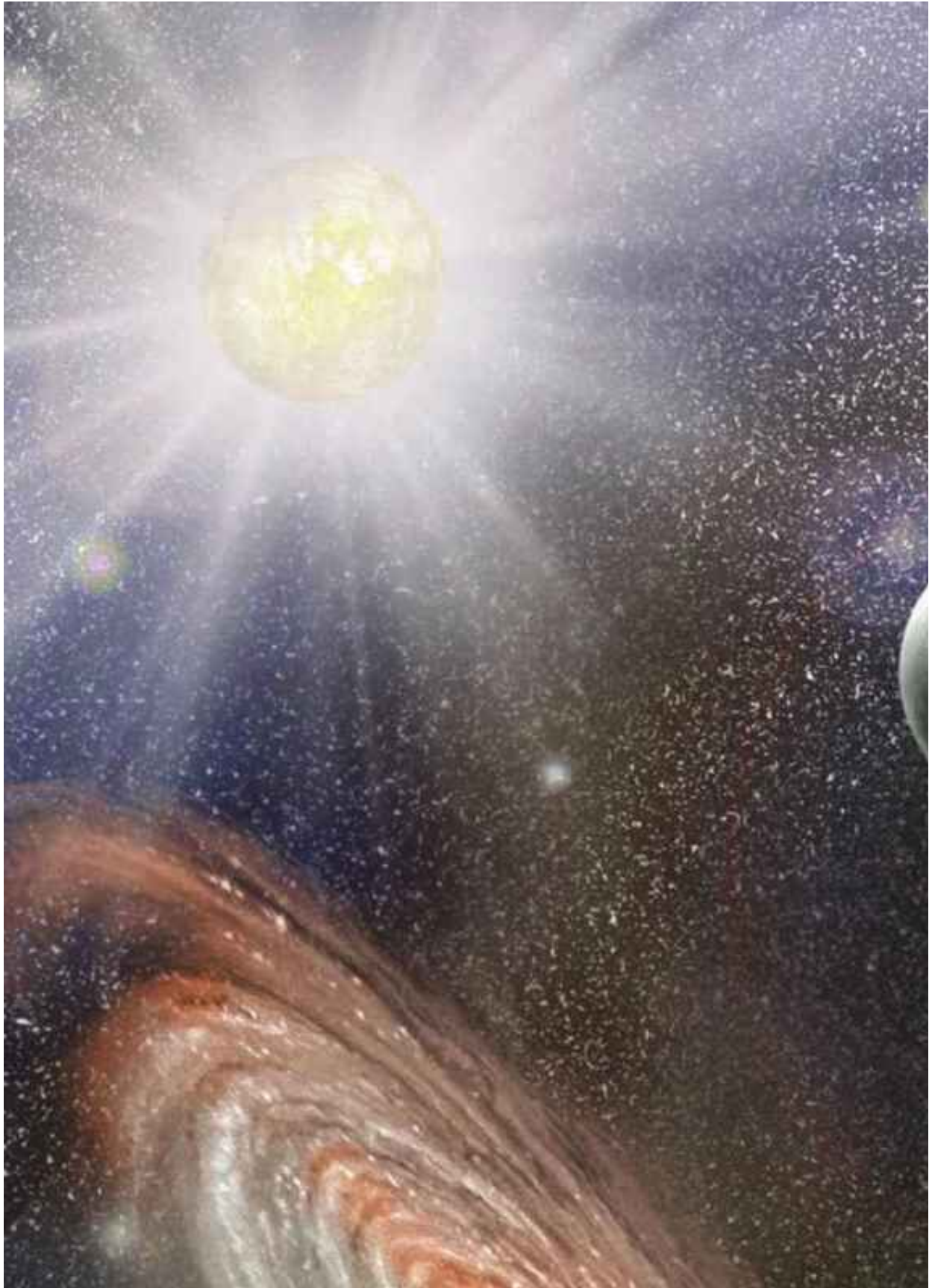
**Stars**  
**radiate energy**  
**created from nuclear**



**created from nuclear fusion, which is a process that takes place in a star's core and involves hydrogen fusing (burning) to make helium.**

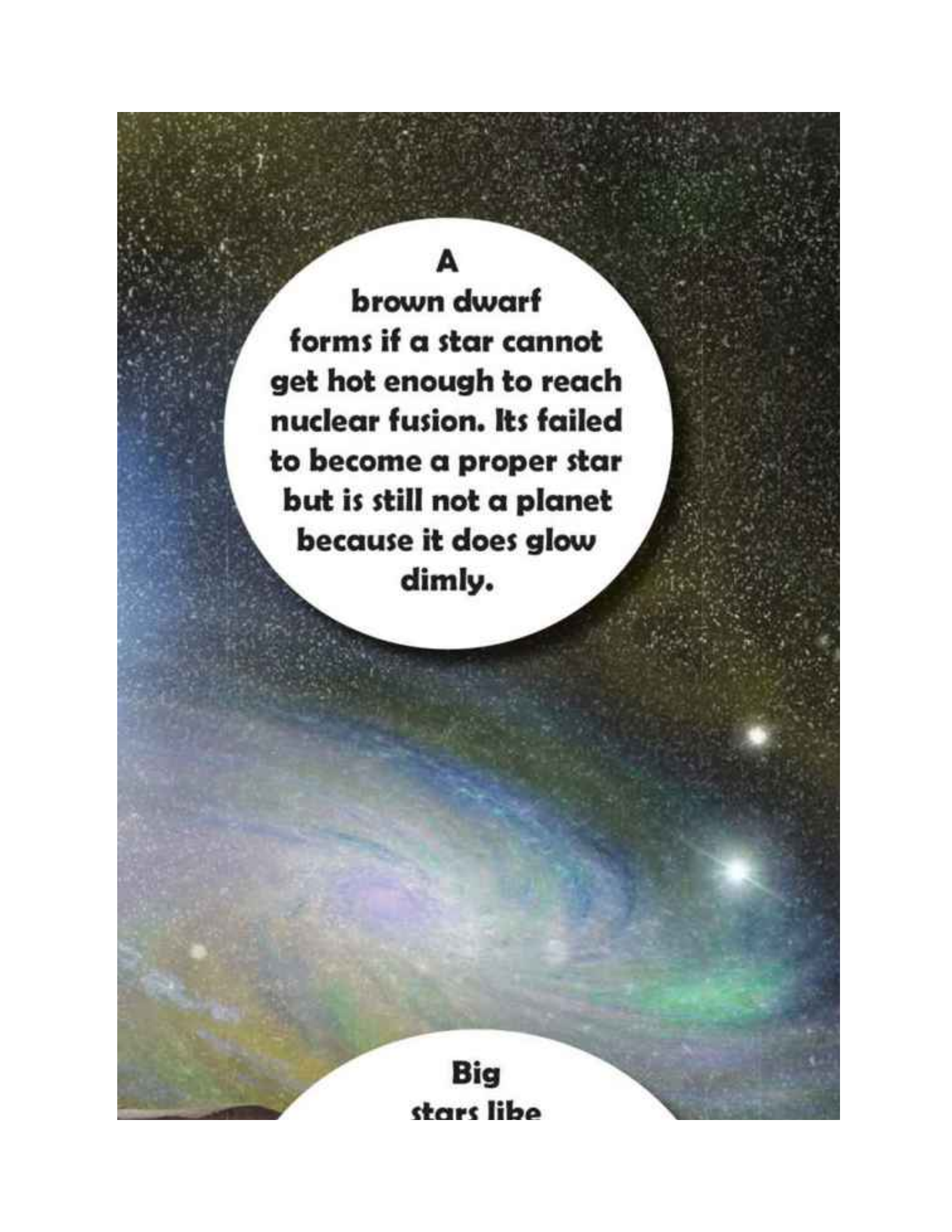






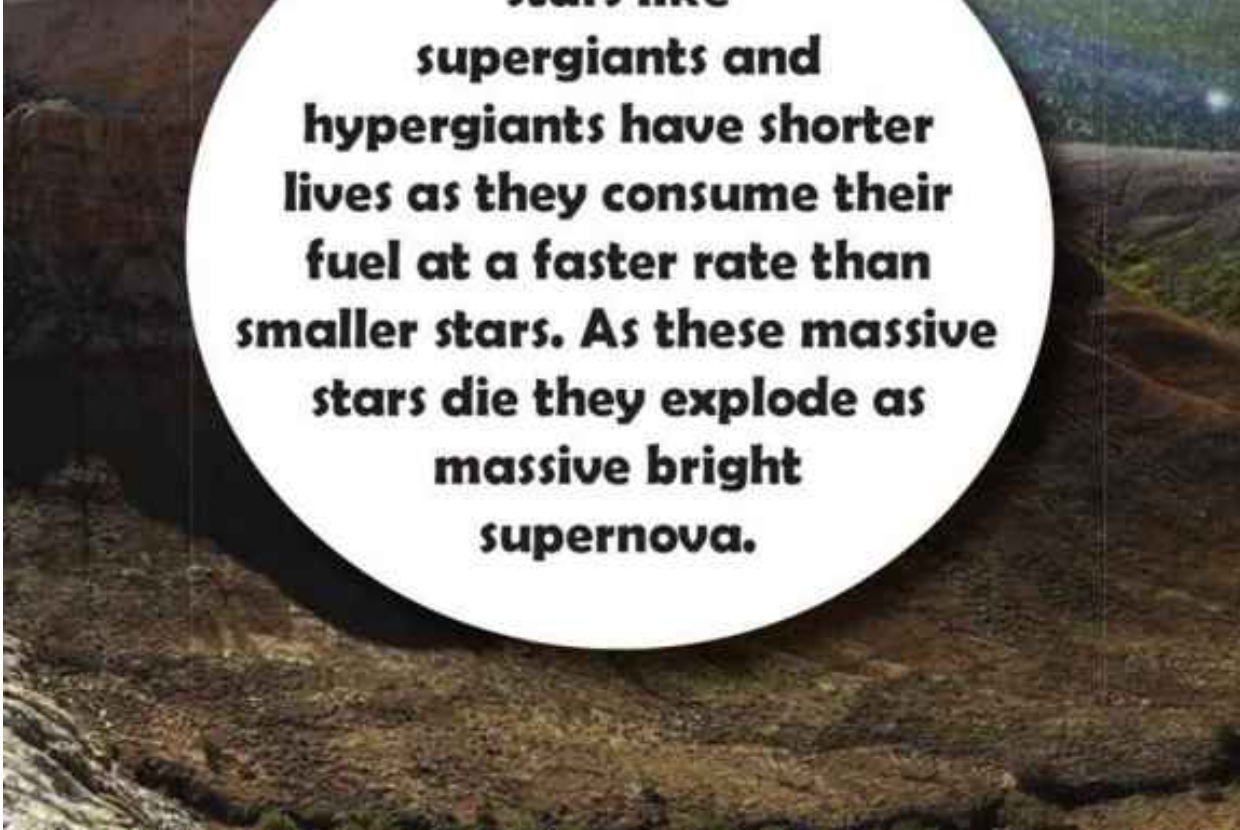






**A  
brown dwarf  
forms if a star cannot  
get hot enough to reach  
nuclear fusion. Its failed  
to become a proper star  
but is still not a planet  
because it does glow  
dimly.**

**Big  
stars like**



**supergiants and  
hypergiants have shorter  
lives as they consume their  
fuel at a faster rate than  
smaller stars. As these massive  
stars die they explode as  
massive bright  
supernova.**



**BLA**

**HO**

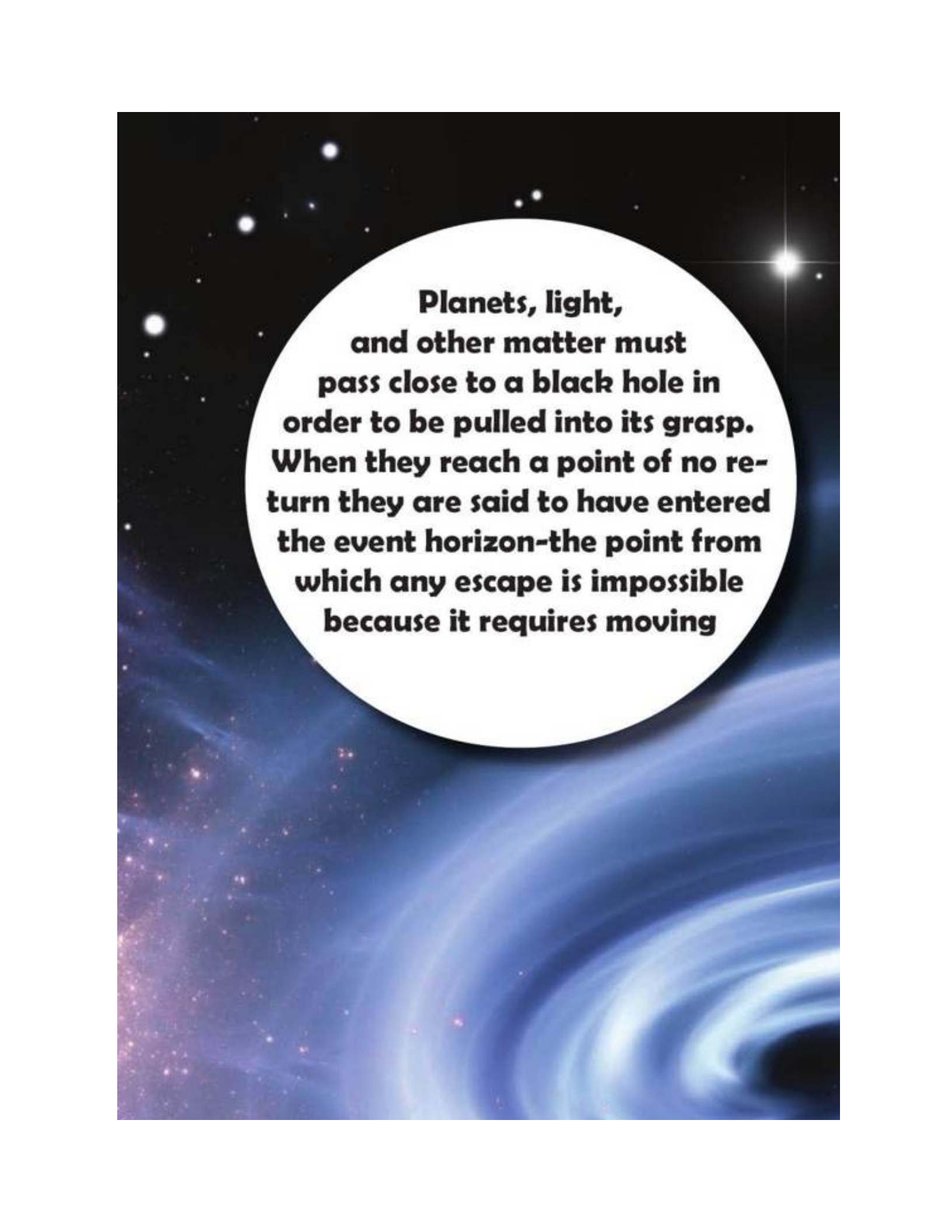


A black hole with a glowing blue accretion disk against a starry background. The black hole is a dark, circular void in the center, surrounded by a bright, multi-layered ring of blue and white light. The background is a dark, starry space with some faint, wispy clouds of gas or dust.

**Very  
heavy stars  
that have gone  
supernova can  
actually turn into  
black holes**



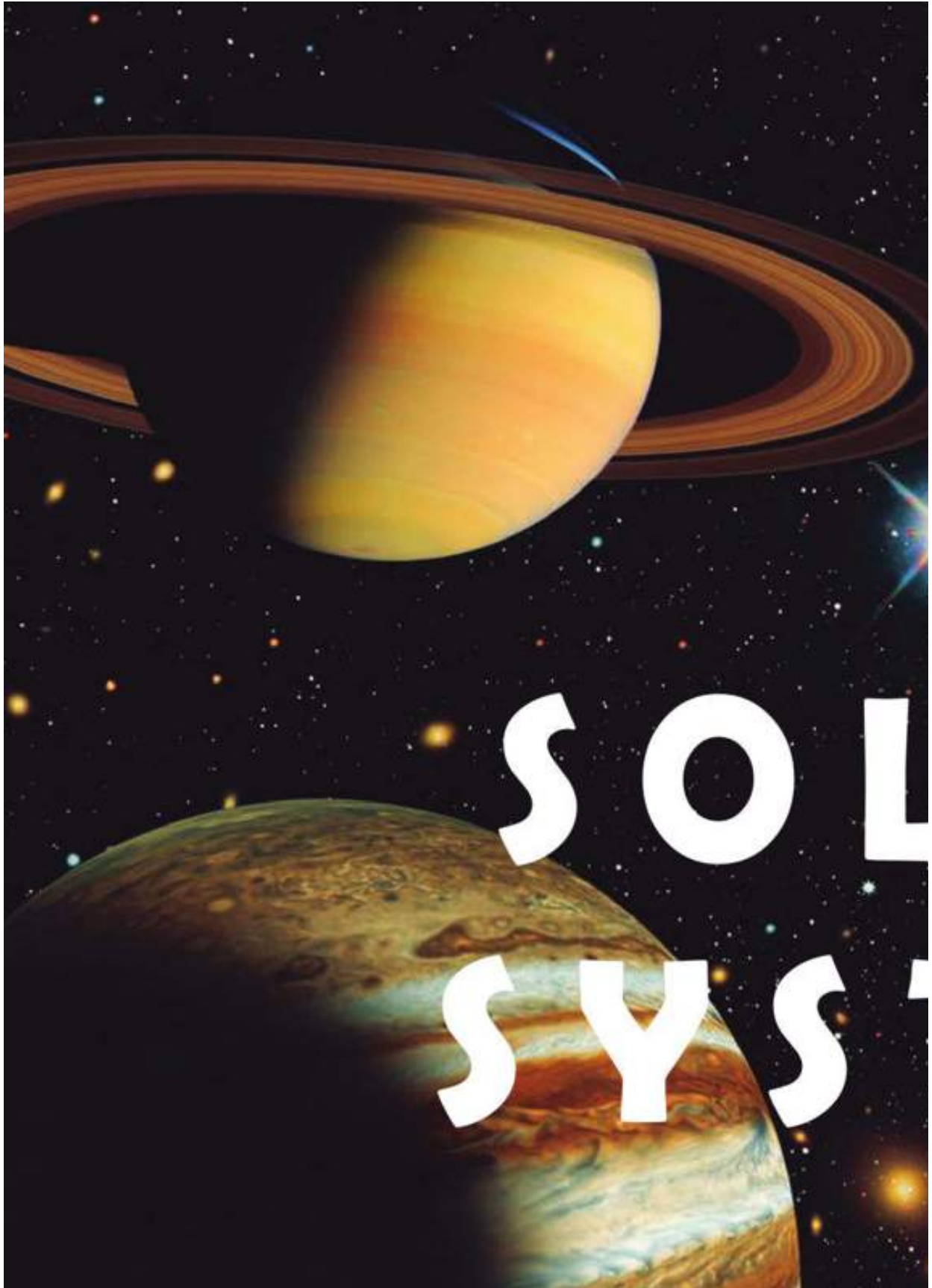
**black  
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from v  
preven  
includi  
e!**



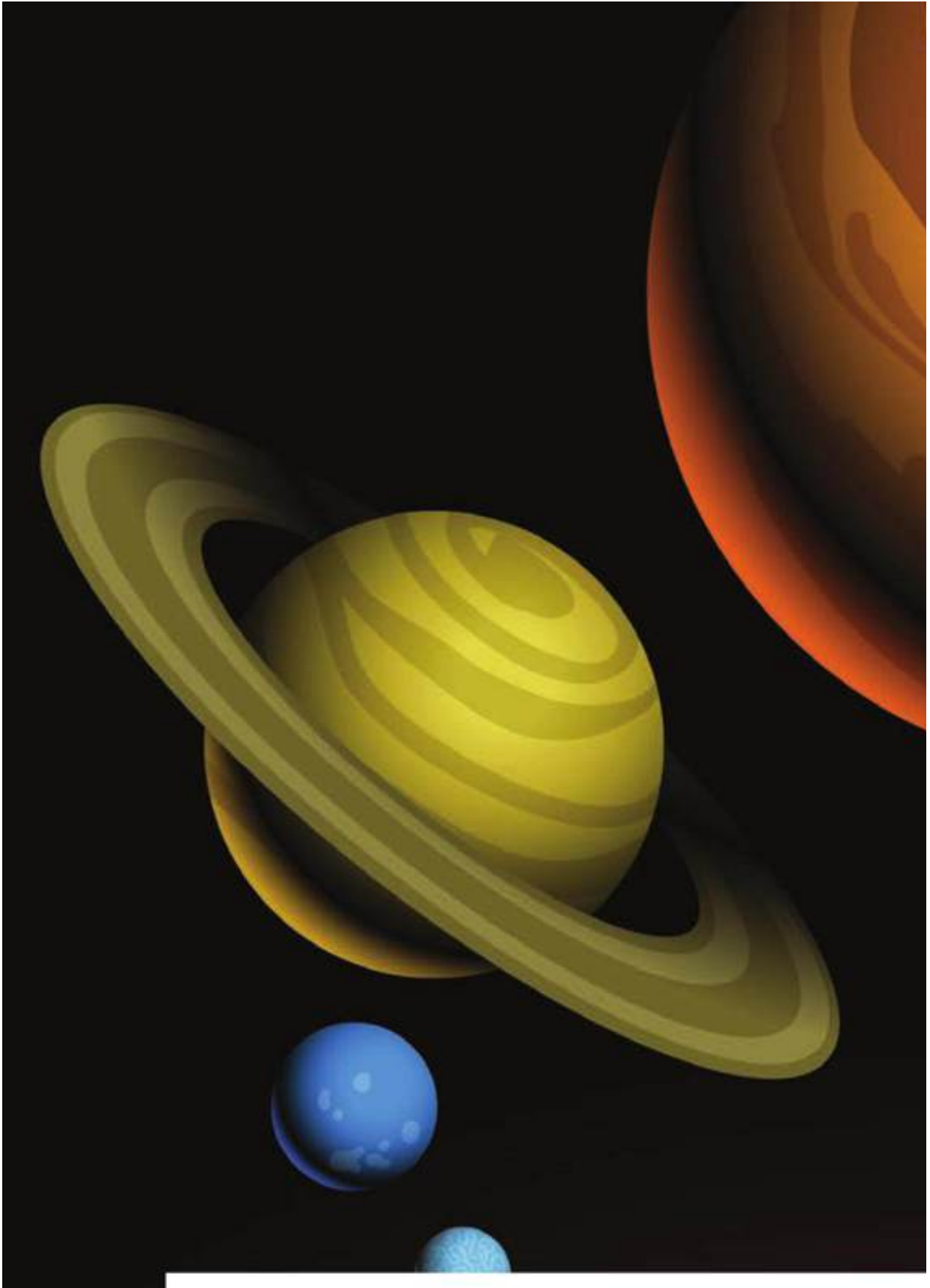
**Planets, light,  
and other matter must  
pass close to a black hole in  
order to be pulled into its grasp.  
When they reach a point of no re-  
turn they are said to have entered  
the event horizon-the point from  
which any escape is impossible  
because it requires moving**












**The Solar System was formed  
ago and consists of the Sun  
other astronomical objects be  
was cause by the collapse of a  
at the centre collecting to form  
around it which the planets are  
be form**





**The four smaller inner planets  
“terrestrial planets” (Mercury  
primarily composed of rock and**



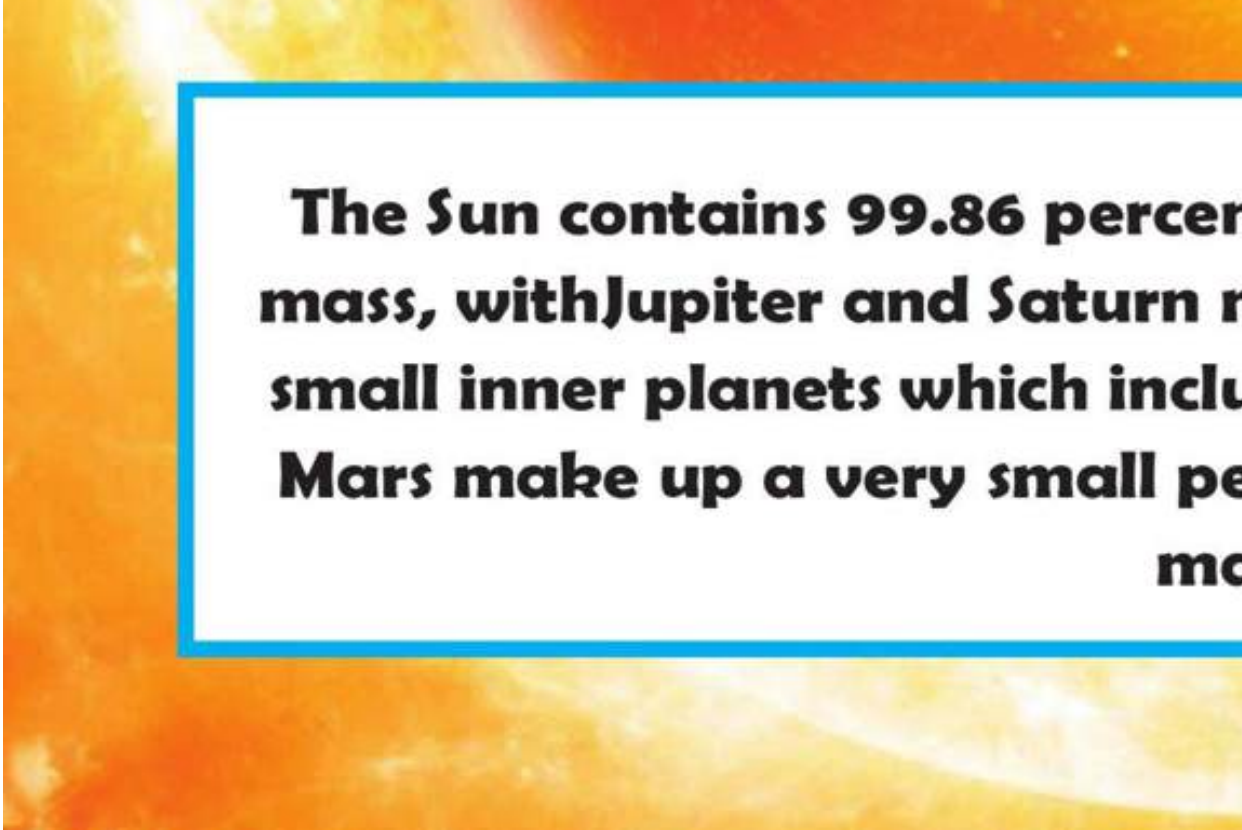
**also known as the “gas giants (Jupiter and Neptune), are substantially larger than the inner planets. The two inner planets, Saturn and Jupiter, are the larger of the four and are composed of hydrogen and helium. The two outer planets, Uranus and Neptune, are composed of hydrogen, helium, and methane) and are sometimes referred to as gas giants.”**







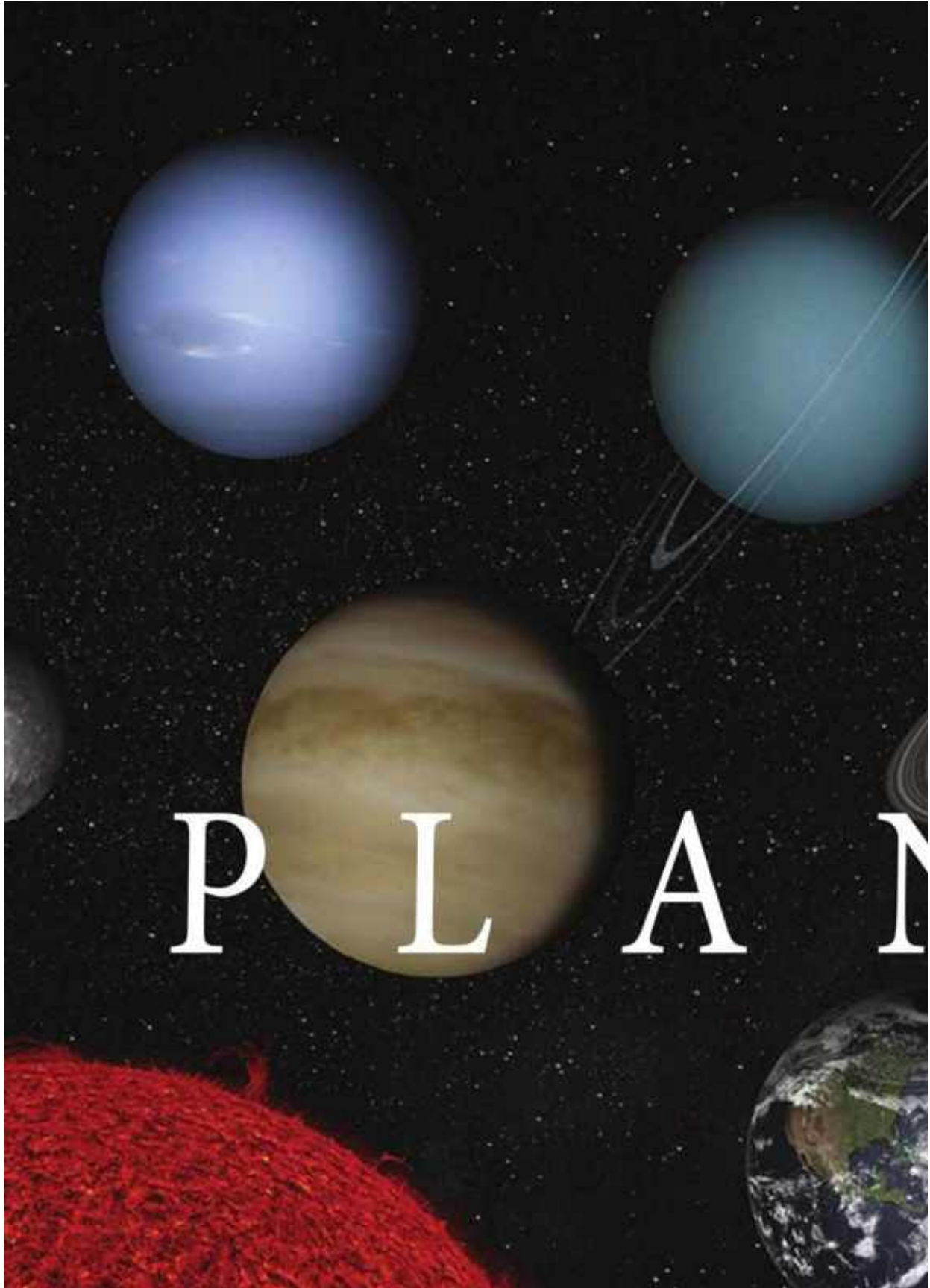


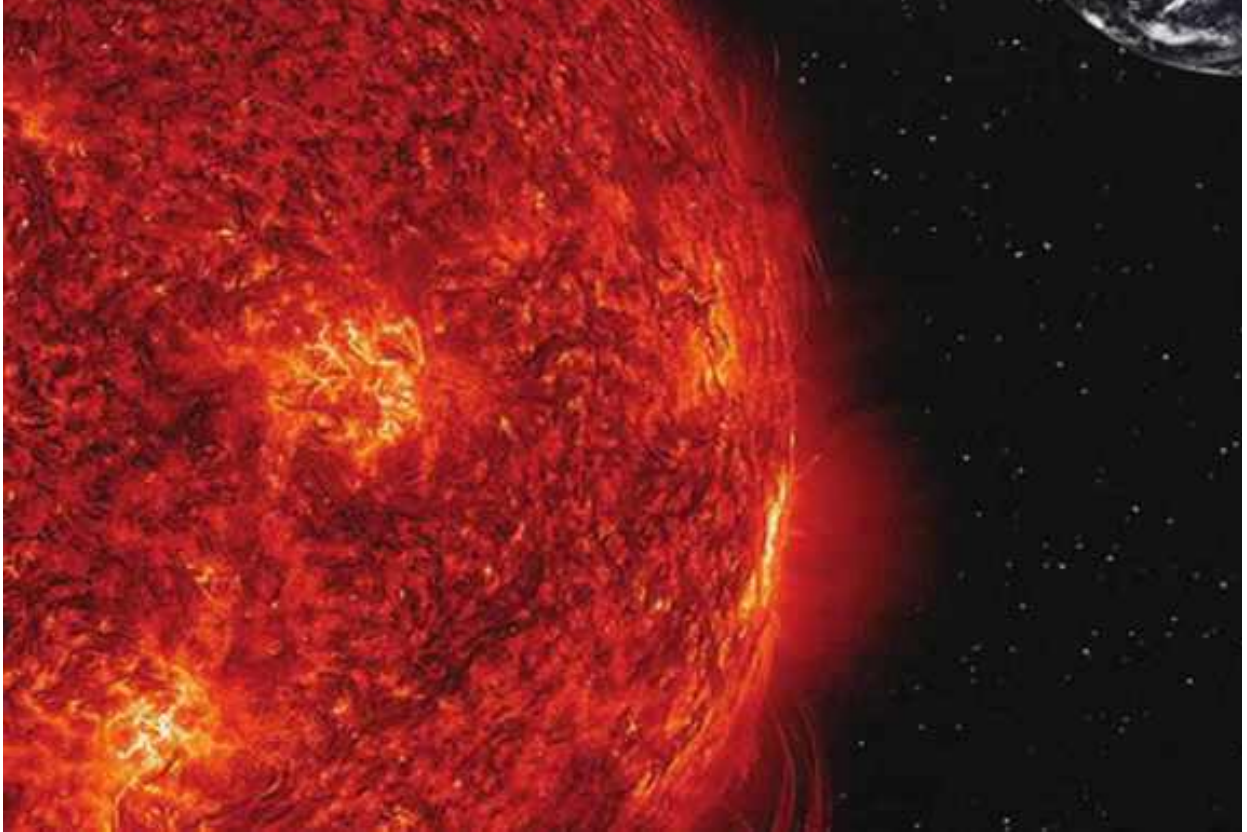


**The Sun contains 99.86 percent of the total mass of the solar system, with Jupiter and Saturn being the next largest planets. The small inner planets which include Mercury, Venus, Earth, and Mars make up a very small percentage of the total mass.**

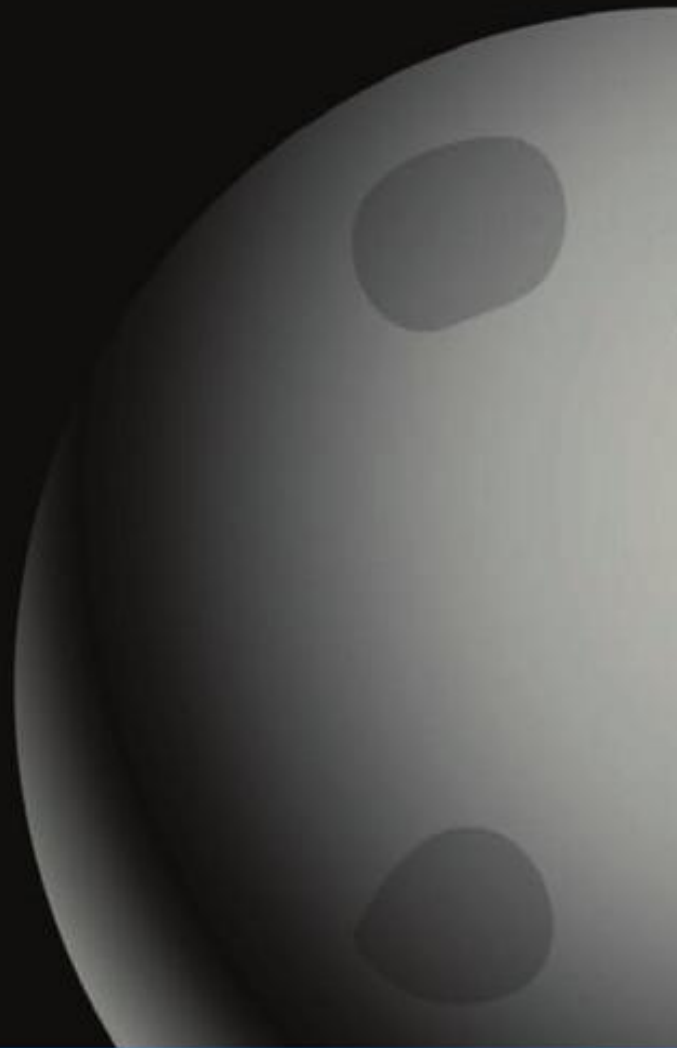








# Mer



**Mercury is the closest plan**



**proximity it is not easily seen  
two orbits of the Sun, Mercury  
its axis and up until 1965 it was  
Mercury constantly faced the  
Mercury can be observed from  
face of the Sun in an event called  
on the 9th**



**Facts:**

**Mass:**

**330,104,000,000,000  
billion kg (0.055 x  
Earth)**

**Moon:**

**None**

**Surface Temperature:**

**-173 to 427°C**

**First Record:**

**14th century BC**

**Recorded By:**

**Accurian astronomers**

## **Assyrian astronomers**

**A year in Mercury is just 88 days long. Mercury is the smallest planet in the Solar System.**

Ve



**Venus is the second planet from the Sun, the brightest object in the night sky, and named after the Roman goddess of love and beauty. It is the largest terrestrial planet and Earth's sister planet due to its similar size. However, the surface of the planet is obscured by thick clouds of sulfuric acid, which are made up of**



**Facts:**

**Mass:**

**4,867,320,000,000,000  
billion kg (0.815 x Earth)**

**Moon:**

**None**

**Surface Temperature:**

**462 °C**

**First Record:**

**17th century BC**

**Recorded By:**

**Babylonian astronomers**

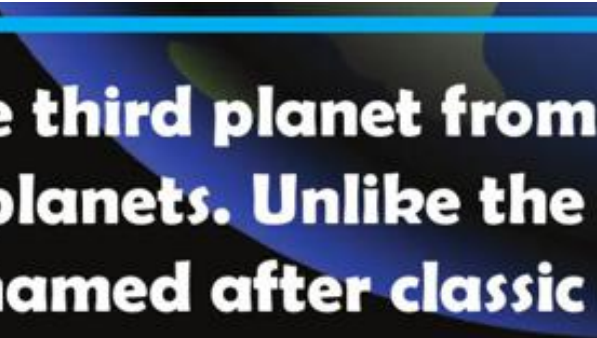
**The Earth and Venus are**

**The Earth and Venus are  
very similar in size with  
only a 638 km  
difference in diameter,  
Venus having 81.5% of the  
Earth's mass.**

**Eco**







**Earth is the third planet from the Sun and the only planet in the Solar System known to support life. It is the only terrestrial planet that is not a dwarf planet. Unlike the other planets in the Solar System, Earth is the only planet that is named after a deity. The name Earth is derived from the Anglo-Saxon word eorðe, which means 'ground'. The Earth was formed approximately 4.54 billion years ago and is the only planet in the Solar System known to support life.**



**Facts:**

**Mass:**

**5,972,190,000,000,000  
billion kg**

**Moon:**

**1**

**Surface Temperature:**

**-88 to 58°C**

**First Recorded:**

**NA**

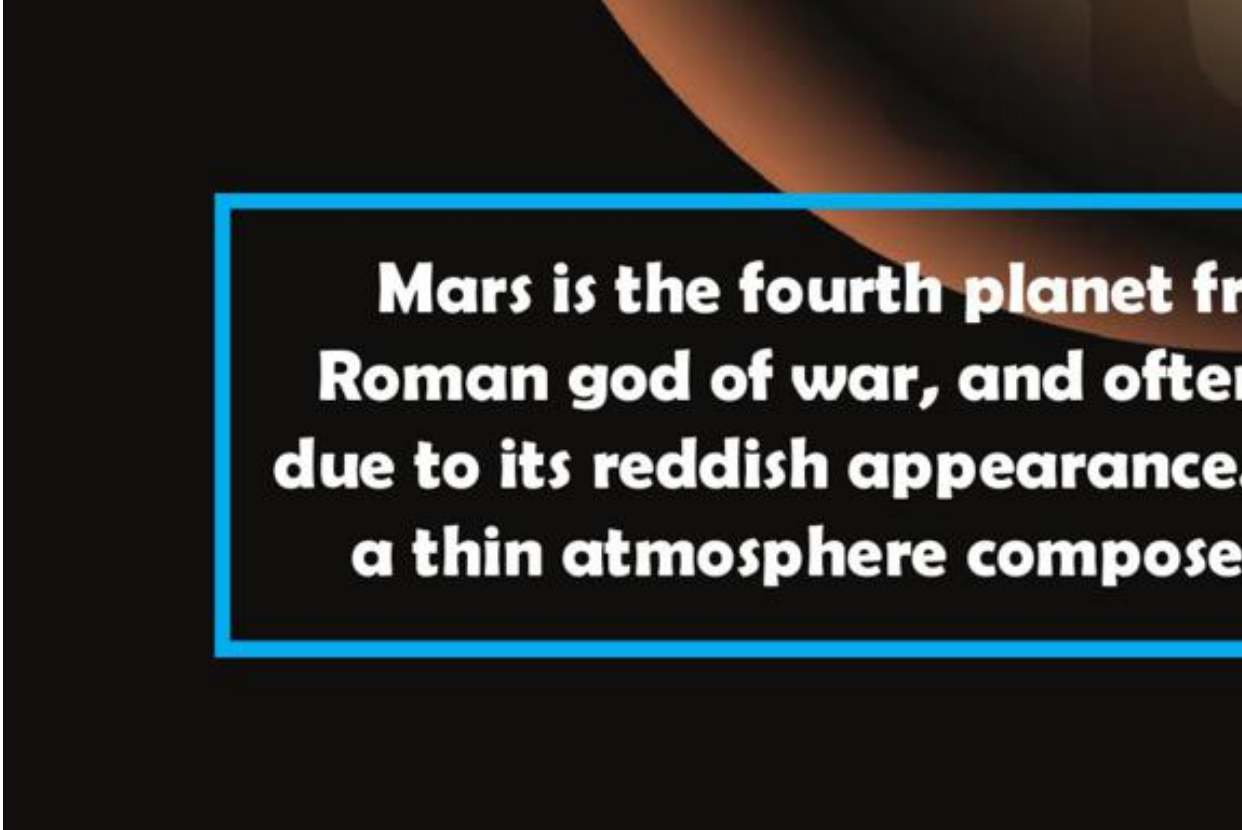
**Recorded By:**

**NA**

**Earth has a powerful magnetic field. This phenomenon is caused by the nickel-iron core of the planet, coupled with its rapid rotation.**

**M**





**Mars is the fourth planet from the Sun, named after the Roman god of war, and often referred to as the Red Planet due to its reddish appearance. It has a thin atmosphere composed primarily of carbon dioxide.**



**Facts:**

**Mass:**

**641,693,000,000,000  
billion kg (0.107 x Earth)**

**Moon:**

**2**

**Surface Temperature:**

**-87 to -5 °C**

**First Record:**

**2nd millenium BC**

**Recorded By:**

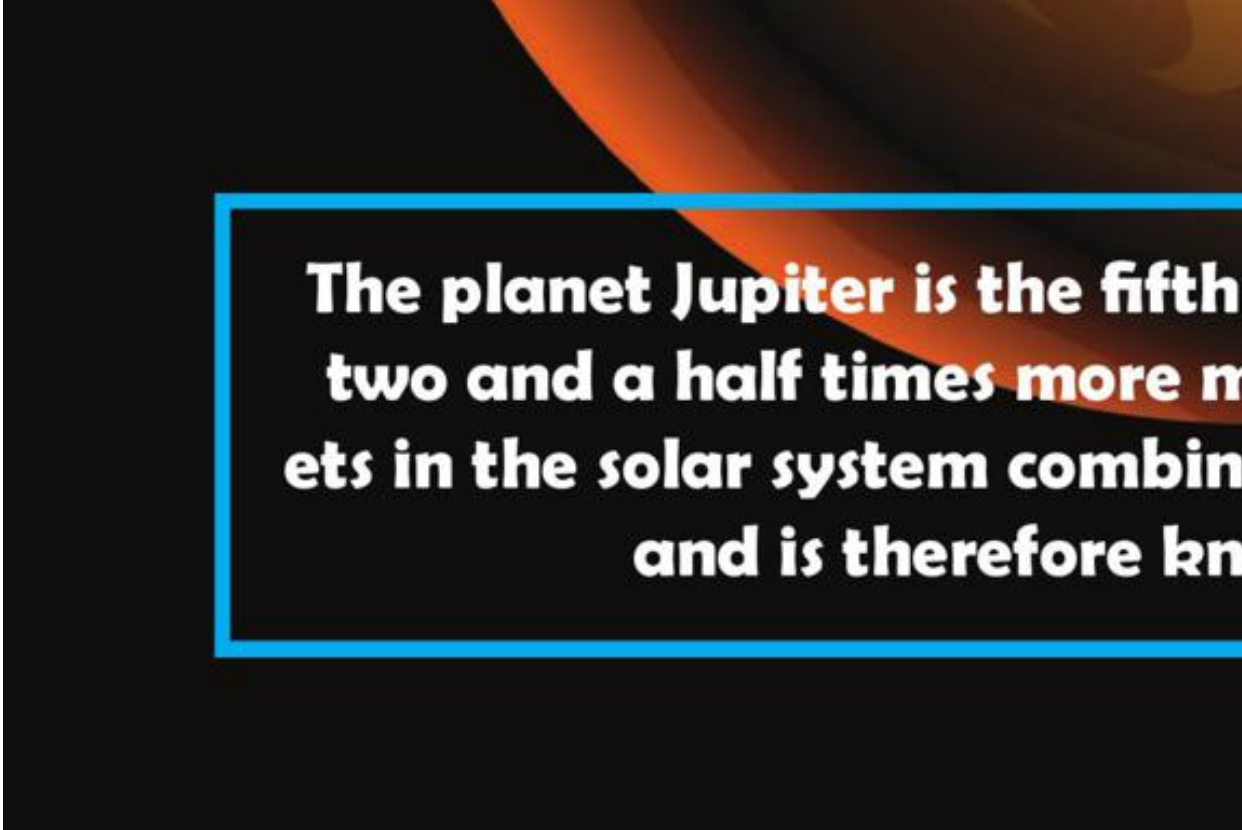
**Egyptian astronomers**

**Mars is home to the tallest mountain in the solar system. Olympus Mons, a shield volcano, is 21km high and 600km in diameter.**

**Jup**







**The planet Jupiter is the fifth  
two and a half times more m  
ets in the solar system combin  
and is therefore kn**



**Facts:**

**Mass:**

**1,898,130,000,000,000,000  
billion kg (317.83 x Earth)**

**Moon:**

**67**

**Rings:**

**4**

**Surface Temperature:**

**-108°C**

**First Record:**

**7th or 8th century BC**

**Recorded By:**

**Babylonian astronomers**

**Jupiter is the fourth brightest object in the solar system. Only the Sun, Moon and Venus are brighter. It is one of five planets visible to the naked eye from Earth.**

**Sat**



**Saturn is the sixth planet from the Sun that can be seen with the naked eye. It is famous for its fabulous ring system that was first discovered by astronomer Galileo Galilei in 1610.**



**Facts:**

**Mass:**

**568,319,000,000,000,000  
billion kg (95.16 x Earth)**

**Moon:**

**62**

**Rings:**

**30+ (7 Groups)**

**Surface Temperature:**

**-139 °C**

**First Record:**

**8th century BC**

**Recorded By:**

## **Assyrians**

**Saturn can be seen with the naked eye. It is the fifth brightest object in the solar system and is also easily studied through or a small telescope.**

**Uro**





**Uranus is the seventh planet  
the naked eye, and became  
the use of a telescope. Uranus  
axial tilt of 98 degrees. It is of  
the Sun of**



**Facts:**

**Mass:**

**86,810,300,000,000,000  
billion kg (14.536 x Earth)**

**Moon:**

**27**

**Rings:**

**13**

**Surface Temperature:**

**-197 °C**

**Discover Date:**

**March 13th 1781**

**Discovered By:**

.....


## **William Herschel**

**Uranus makes one trip around the Sun every 84 Earth years.**

**Uranus is often referred to as an “ice giant” planet.**

**Nep**





**Neptune is the eighth planet  
distant planet from the Sun.  
formed much closer to the Sun  
before migrating to**



**Facts:**

**Mass:**

**102,410,000,000,000,000  
billion kg (17.15x Earth)**

**Moon:**

**14**

**Rings:**

**5**

**Surface Temperature:**

**-201 °C**

**Discover Date:**

**September 23rd 1846**

**Discovered By:**

**Urbain Le Verrier & Johann  
Galle**

2016

**Neptune is not visible to the naked eye and was first observed in 1846. Its position was determined using mathematical predictions. It was named after the Roman god of the sea.**

# Dwarf

## MAKEMAKE

**Makemake is the second furthest dwarf planet to the Sun and is the only one of the outer four dwarf planet to not have any moons.**

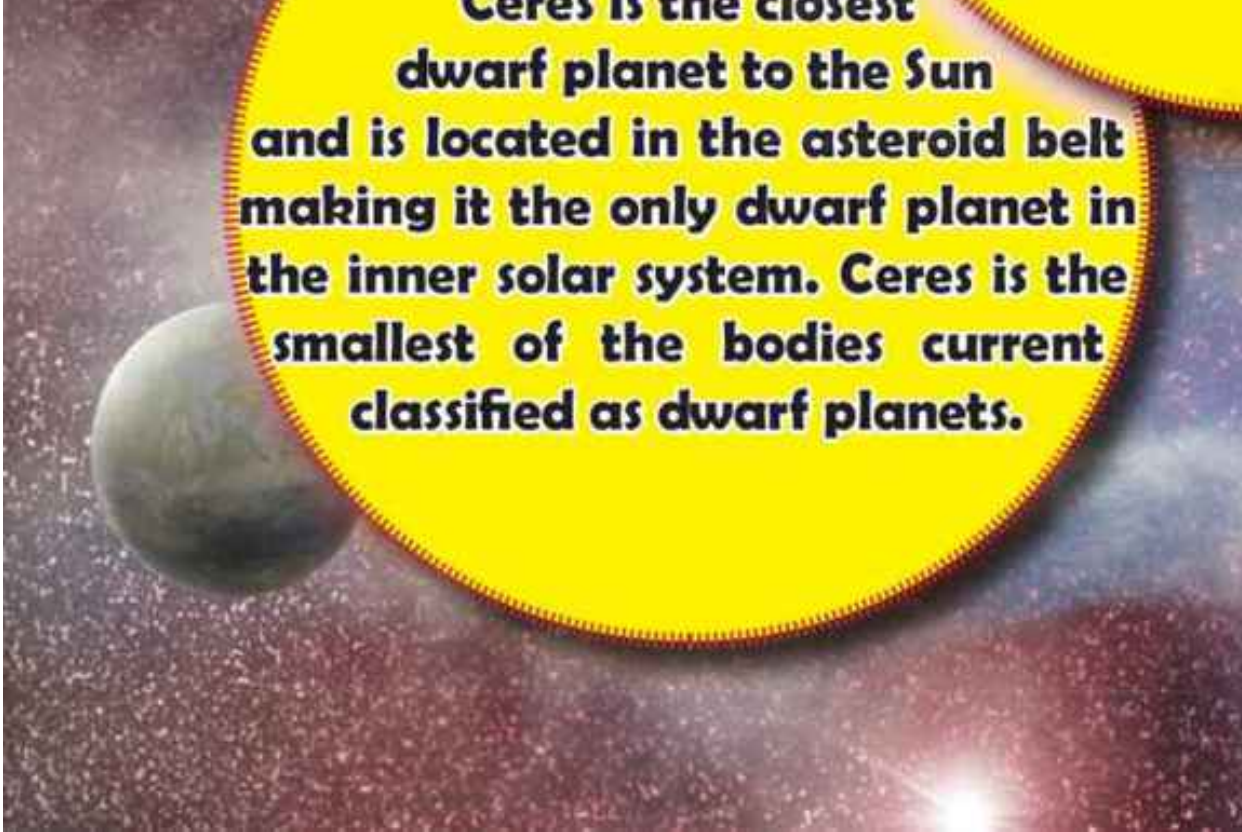
## PLUTO

**Discovered in 1930, Pluto is the second closest dwarf planet to the Sun and is classified as the largest dwarf planet. Pluto is also the second most massive dwarf planet with the most moons.**

## CERES

**Ceres is the closest dwarf planet to the Sun.**

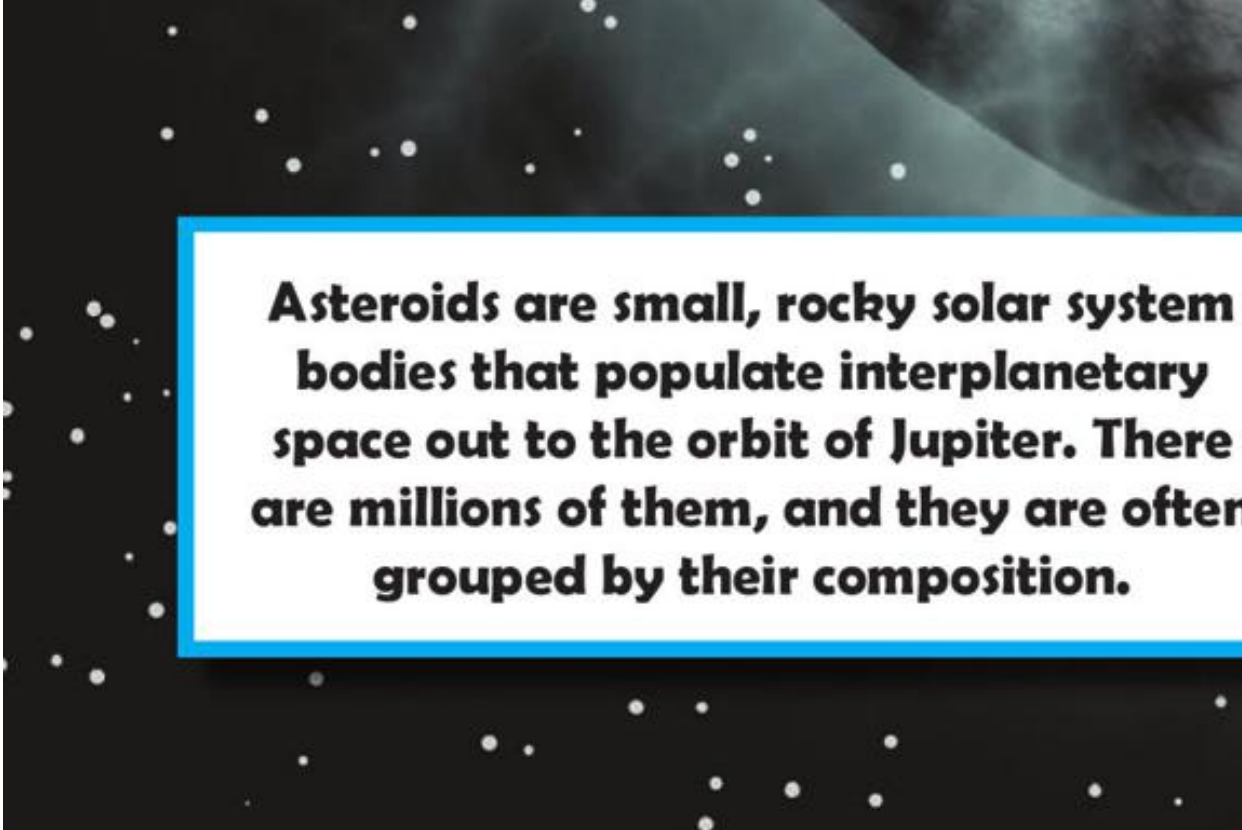




**Ceres is the closest  
dwarf planet to the Sun  
and is located in the asteroid belt  
making it the only dwarf planet in  
the inner solar system. Ceres is the  
smallest of the bodies current  
classified as dwarf planets.**

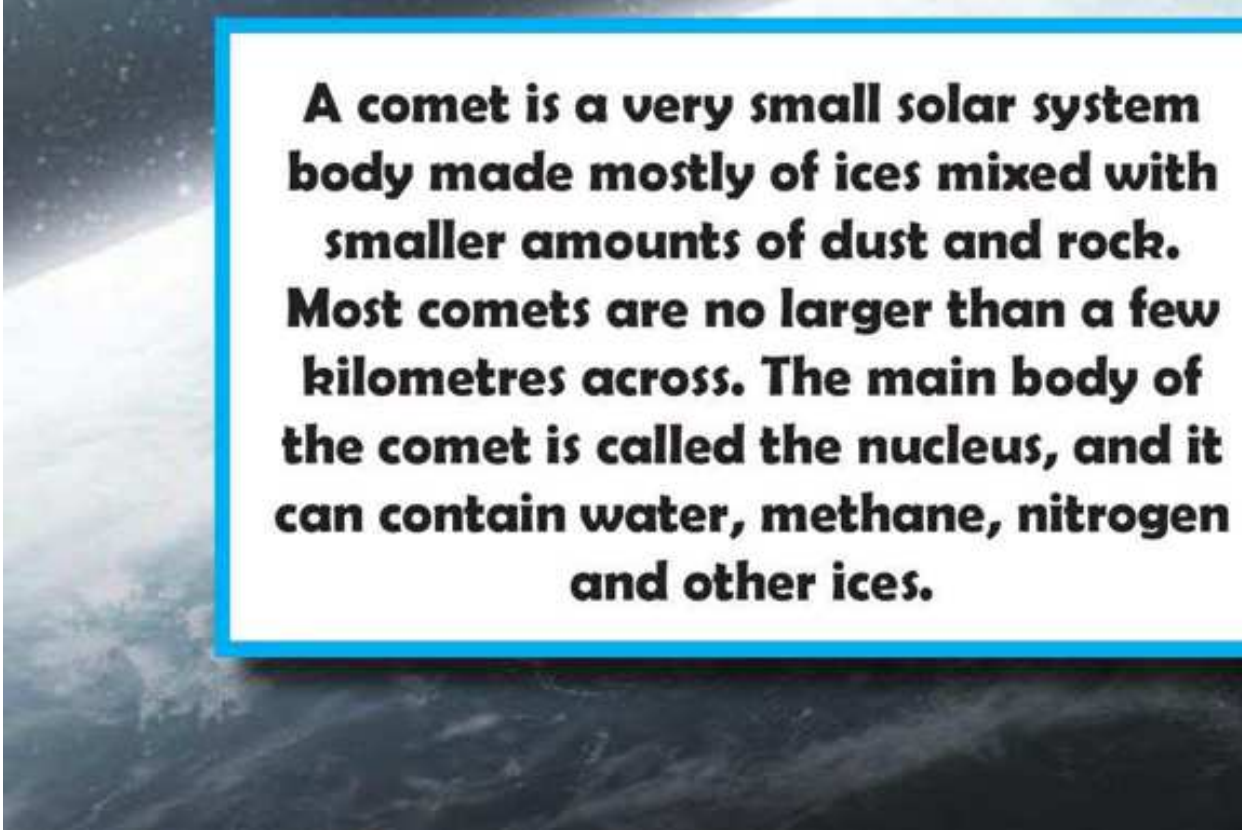
A dark space background with a star field and a nebula. The word "ASTER" is written in large white letters across the top. The nebula is a mix of dark and light colors, with some reddish and blueish hues. The stars are small white dots of varying sizes.

**ASTER**

The background of the slide is a dark space scene filled with numerous small white stars of varying sizes. In the upper right corner, a portion of a planet with a dark, textured surface is visible. A bright blue rectangular border frames the text area in the center.

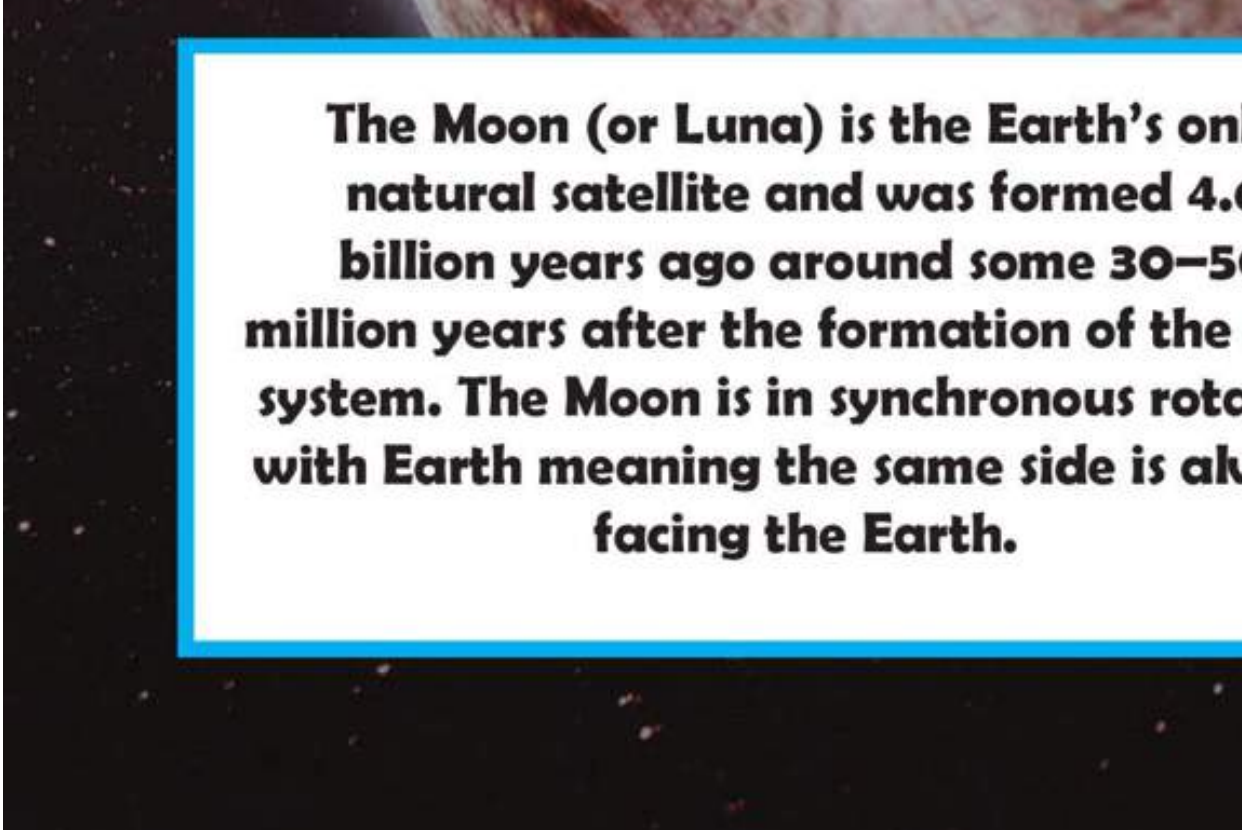
**Asteroids are small, rocky solar system bodies that populate interplanetary space out to the orbit of Jupiter. There are millions of them, and they are often grouped by their composition.**





**A comet is a very small solar system body made mostly of ices mixed with smaller amounts of dust and rock. Most comets are no larger than a few kilometres across. The main body of the comet is called the nucleus, and it can contain water, methane, nitrogen and other ices.**

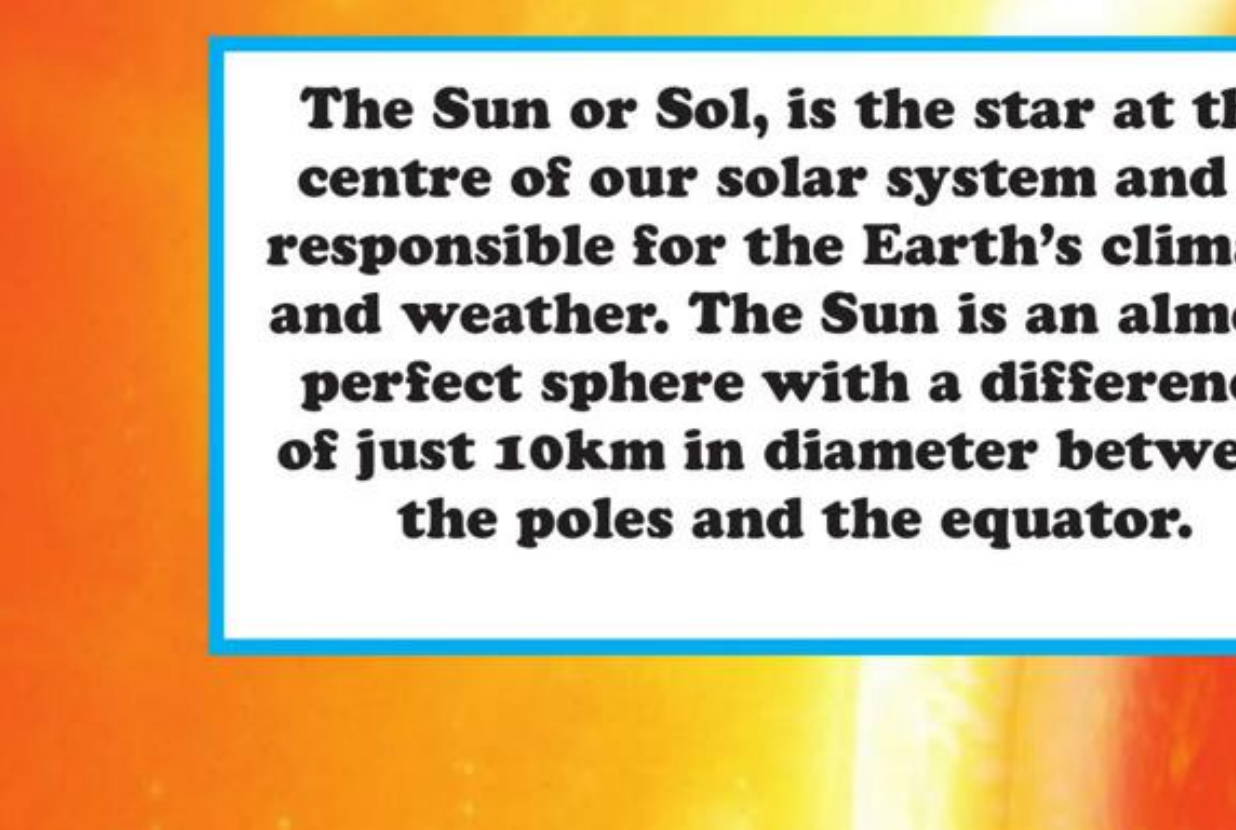


The background of the slide is a dark, starry space. In the upper right corner, there is a small, partially visible image of a reddish-brown celestial body, likely Mars. A bright blue rectangular border frames the text area on the right side of the slide.

**The Moon (or Luna) is the Earth's only natural satellite and was formed 4.6 billion years ago around some 30–50 million years after the formation of the system. The Moon is in synchronous rotation with Earth meaning the same side is always facing the Earth.**

SU





**The Sun or Sol, is the star at the centre of our solar system and responsible for the Earth's climate and weather. The Sun is an almost perfect sphere with a difference of just 10km in diameter between the poles and the equator.**



