

Q: What is blackhole? How black holes are formed and discovered? (5)

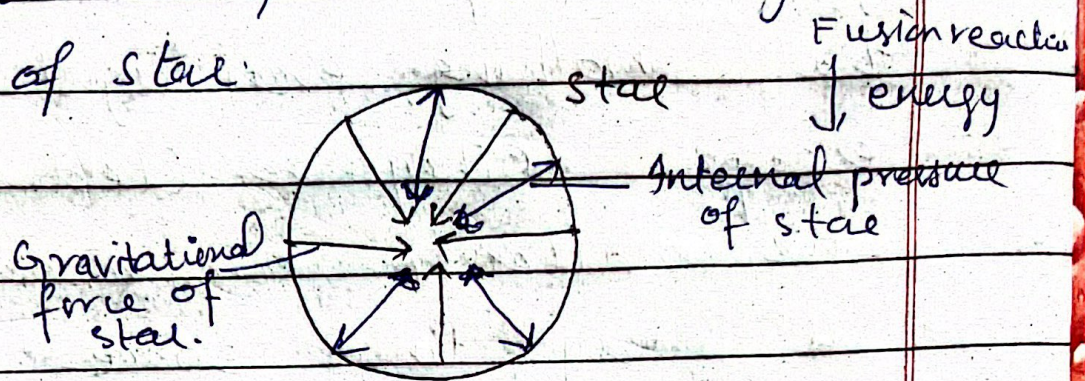
Blackhole:-

Blackhole is an object of extreme density and high gravitational force to the extent that nothing, even light cannot escape. They resulted when the matter is compressed in a very tiny space. It happens when the life of star is ending or at its death. As, no light escapes from it, ~~but~~ that's why it is invisible called blackhole. Telescopes can be placed in them which can track them.

Formation of blackhole:-

Blackhole is formed in the stars which have large amount of energy or heat, even greater

than the Sun. So, when they run out of this energy, collapse of star will happen. Fusion reaction is continuously going in the star, which generates heat. This heat provides internal pressure to the sun, balances the gravitational force of star.



In fusion reaction, Helium is formed which then forms heavy metals like iron, copper, magnesium etc. So, internal pressure of star is decreased and balance between the gravitational force and internal pressure of star is disturbed when the Matter started to concentrate in the centre and star collapses. That's why black hole is also called as the collapse.

Discovery of blackholes-

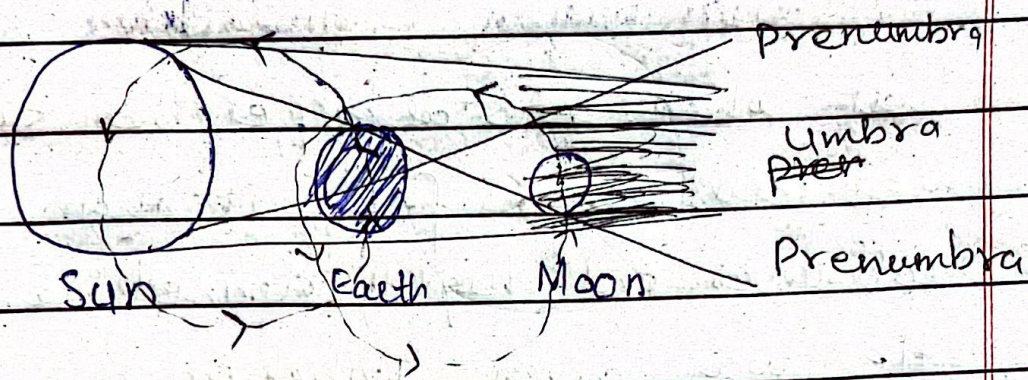
The work on blackhole was first started in 1783 by John Micheal. Then, Albert Einstein gave its idea by his theory of relativity in 1916. Then 1931, Astrophysicist Subrahmanyan Chandrasekhar said that when a star bigger than sun uses all of its fuel, it then collapses and highly densed mass. He was given Nobel prize on it in 1983. The name was given by John Wheeler in 1967. Later on, quasars were discovered which proved the existence of blackholes.

Q: Differentiate between Solar eclipse and Lunar eclipse?

Lunar Eclipse:-

Earth orbits around the

Sun, while moon orbits around the Earth. When ~~moon~~ Earth comes in between the ~~Earth~~ ^{moon} and the sun, lunar eclipse occurs. Earth ~~moon~~ blocks the light from sun to the Moon and it appears darker.



Types of lunar eclipse:

1. Penumbral lunar eclipse:

When the moon passes through the penumbra region of Earth's shadow.

2. Partial lunar eclipse:

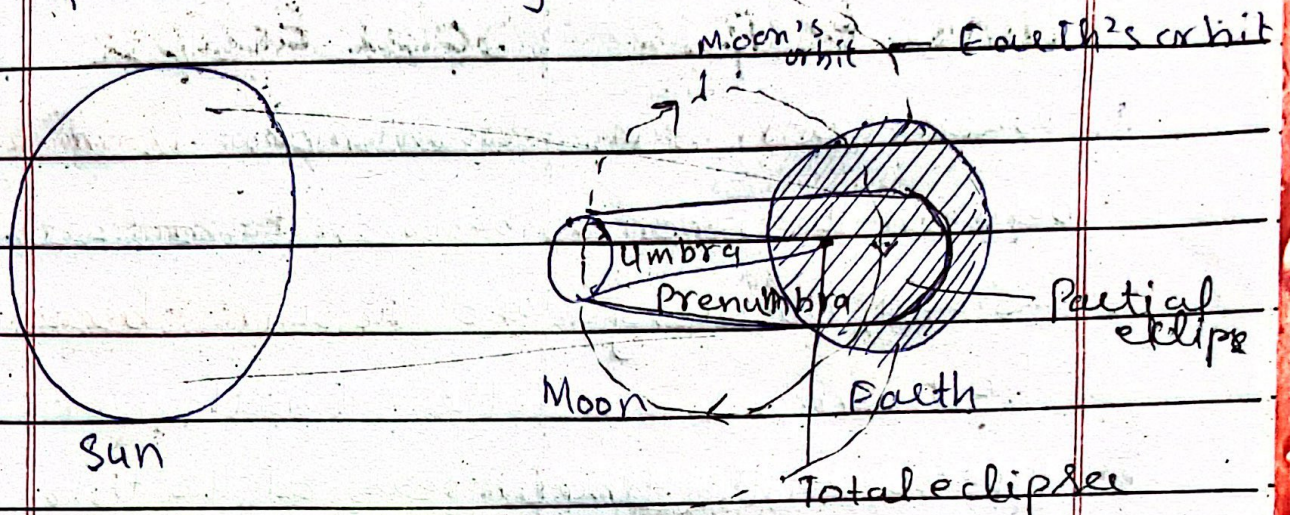
When a part of moon passes through the umbra region of Earth's shadow.

3. Total lunar eclipse:

When a total moon passes through the umbra of Earth's shadow.

Solar Eclipse:-

When moon while orbiting around the Earth comes in between the Sun and the Earth. It blocks the light from reaching the Earth.



Types of Solar eclipse:

1. Partial lunar eclipse:

When Earth, moon and Sun is not directly aligned in one line.

2. Total lunar eclipse:

When moon completely covers the sun. It is seen from very small area on Earth.

3. Annular solar eclipse:

When a small object like moon is in between the

The Sun and the Earth, light escapes and falls on the surface of the Earth and gives a bead like pattern called as Bailey Beads or the lovely Diamond ring effect.

Lunar Eclipse

1. When Earth is in between the moon and the sun, obscuring the moon.
2. Appears at the time of full moon.
3. It Occurs 3-4 times in a year.
4. Safe to look at Lunar Eclipse.
5. Can be seen from the Earth.
6. Three types
 1. Penumbral ~~Lunar~~ eclipse
 2. Partial "
 3. Total "

Solar Eclipse

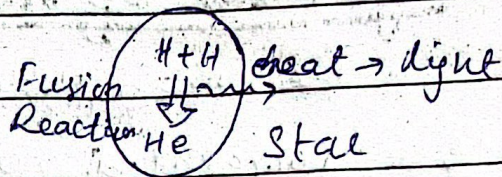
- When moon is in between the Earth and the sun; obscuring the Earth.
- Appears at the time of new moon.
- It occurs every 18-months almost.
- It is not safe to look at solar eclipse.
- Appears for a very short time, so difficult ^{to} observe.
- Three types
 1. Partial solar eclipse
 2. Total "
 3. Asteroid "

_ / _ / 20_

Q: Differentiate b/w star and planets.
What is the magnitude of a star and how the color of the star is correlated with temperature?

Star:-

A celestial object that emits its own light through the chemical reaction i.e. fusion reaction at its centre.



Planet:-

Planet is an object which takes its light from the star and revolves around a star.

Star

1. Star emits its own light through fusion reaction.
2. Planets revolve around the star.
3. Stars move around the centre of their galaxy.

Planet

- Planet takes the light from star.
- Satellites revolve around the planet.
- Planets revolve around the star in an orbit.

Star

Planet

4. Stars have very high temperatures like sun have $5500-6000^{\circ}\text{C}$.

5. Contents are Hydrogen, Helium, light.

6. Example:

The sun, Pistol Star etc.

They have low temperature as they take their light from star.

Contents are liquids, gases, solids or combination of their.

Example: ...

Earth, Venus, Mars etc.

Magnitude of stars

The magnitude of any star is correlated with its brightness.

Stars having the high brightness will have low magnitudes and vice versa.

Magnitudes are ranged from 1-6.

Magnitude of 1 has the highest brightness and that of 6 is low.

The brightness of sun is -26.7 and that of Sirius star is 1.46 . Absolute magnitude is the brightness of an object if located at 10 parsecs.

Absolute magnitude of star is 4.6

Color

Correlation with temperature

Color of the star is correlated with its temperature. Hot stars are ~~red~~^{blue} in color, while ~~blue~~^{red} one are less hot and the yellow are least. The hot star sirius with surface temperature of 9400K, it emits more blue light, so it looks brighter through blue filter and vice versa.

Q: Briefly explain what effects are produced due to Rotation and Revolution of Earth:

Rotation of Earth

Rotation of earth is the movement of earth around its own axis. It takes almost 23 hours, 56 minutes and 4.1 sec. It rotates in anti-clockwise direction.

Effects of rotation of Earth

1. Changes in day and nights

As, Earth moves in anti-clockwise direction around its axis, the part which faces the Sun will have a day-time while the part away from sun experiences night time. As, Earth spins from west to East, the sun rises from the east.

2. Deflection of the Air currents

Rotation of the earth causes deflection of oceans and air current through a process Coriolis effect. Air in the northern hemisphere moves/deflect to the right while air currents in southern hemisphere deflects towards the left.

3. Occurrence of high tides and low tides

Revolution of Earth

While orbiting around its own axis, ^{earth} Sun also moves

around the sun in an orbit called as the Revolution of Earth. It takes about 365.25 days to complete one revolution.

Effects of revolution of Earth-

Changes in season-

As the earth revolves around the sun, part of it ~~moves~~ tilts towards the sun and a part away from it. The part of the Earth which is closer to sun will experience summer season, while the part which is away from sun will experience winter season. When the North pole tilts towards the Northern hemisphere will experience summer. ~~At~~ And, at the same time southern hemisphere ~~a~~ tilts ^{away from} ~~towards~~ the sun will experience winters and vice versa.