

VIRAAAT BATCH

CDS-2, 2023

Geography
Universe Cosmology and Solar system

Lecture No.- 01

By- Rahul Parmar Sir



T DAY'S TARGETS



{ 1 } A

Universe Cosmology

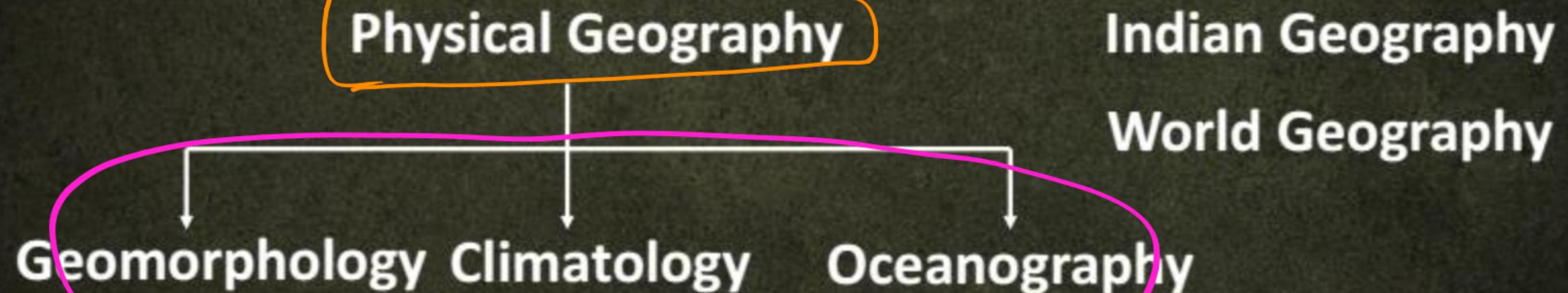
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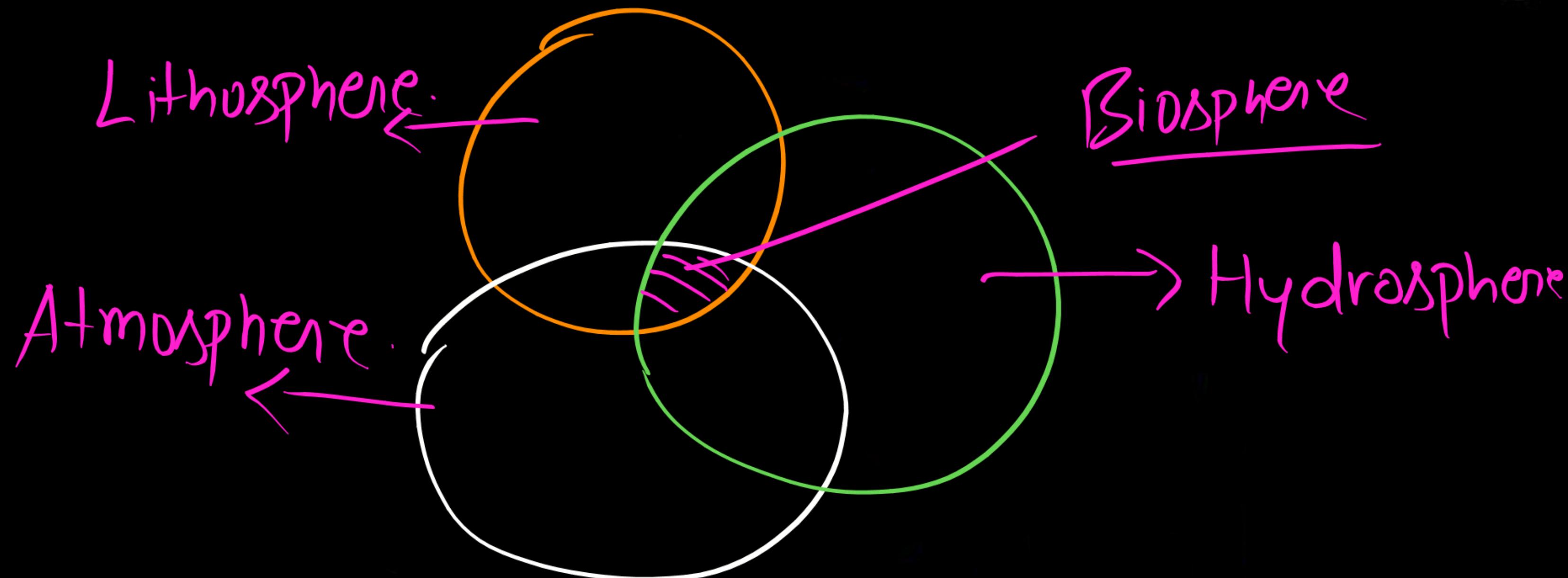
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Geography







Geomorphology

- Universe
- Solar system
- Latitude and longitude
- Interior of the earth
- Formation of the continent
- Plate tectonism
- Geomorphic process
- Endogenic and exogenic
- Earthquake
- Tsunami
- Volcanism

Cosmology





Climatology

1. Composition of Atmosphere
2. Structure of Atmosphere
3. Insolation and Heat Budget
4. Temperature
5. Atmospheric circulation and Pressure belts
6. Winds
7. Primary, secondary and tertiary winds
8. Clouds and rainfall **Humidity**
9. Cyclones





Oceanography

- 61st HOSM
- 1. Importance of the Ocean
- 2. Water index
- 3. Deep sea plain
- 4. Ocean temperature
- 5. Ocean salinity
- 6. Ocean currents
- 7. Ocean tides
- 8. Marine resource
- 9. Maritime law

Q7 → EVS





Indian Geography

1. General introduction of India
2. Physiography of India Mt, Plt, Pln
3. Drainage of India Rivers & Lakes C P, De.
4. Climate and seasons of India
5. Vegetation of India
6. Soil of India
7. Agriculture of India
8. Minerals
9. Industries
10. Transport
11. Population





World Geography

1. Asia
2. Africa
3. Europe
4. North America
5. South America
6. Australia
7. Antarctica





Gaj Mahotsava

CAPE

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W

President Droupadi Murmu took part in **Gaj Utsav** at **Kaziranga** National Park and Tiger Reserve (KNPTR) in Assam to mark 30 years of Project Elephant.

Status of Elephants in India:

- India has about 27,000 Asian Elephants, which is the world's largest population of the species.
- As per Elephant Census (2017), Karnataka has the highest number of elephants (6,049), followed by Assam (5,719) and Kerala (3,054).
- More than 60% of the world's elephant population is in India.
- The elephant is the **Natural Heritage Animal of India**.

1992 - 2023
UPSC - CSE

PW

Launch year	1992
Type	Centrally-sponsored scheme ✓✓
Aim	To protect elephants and improve their habitat and corridors, reduce human-elephant conflict.
<u>Elephant reserves</u>	33 elephant reserves have been notified (Terai ER in Uttar Pradesh became 33rd India's ER); 101 elephant corridors identified.



Universe 201

1

G, CG, S

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W

- **Cosmology:** The scientific study of the large-scale properties of the universe as a whole. The study of Universe is known as Cosmology
- **Astronomy:** the scientific study of celestial objects (stars, planets, comets, etc.) and phenomena that originate outside the Earth's atmosphere.



Universe

Q1E10

PW

- It is totality of everything. It comprises all energy, physical matter and time.
- From an smallest atom to largest galaxy are part of universe.
- The distance in Universe is measured by Light year.
- $(9.46 \times 10^{12}$ km).

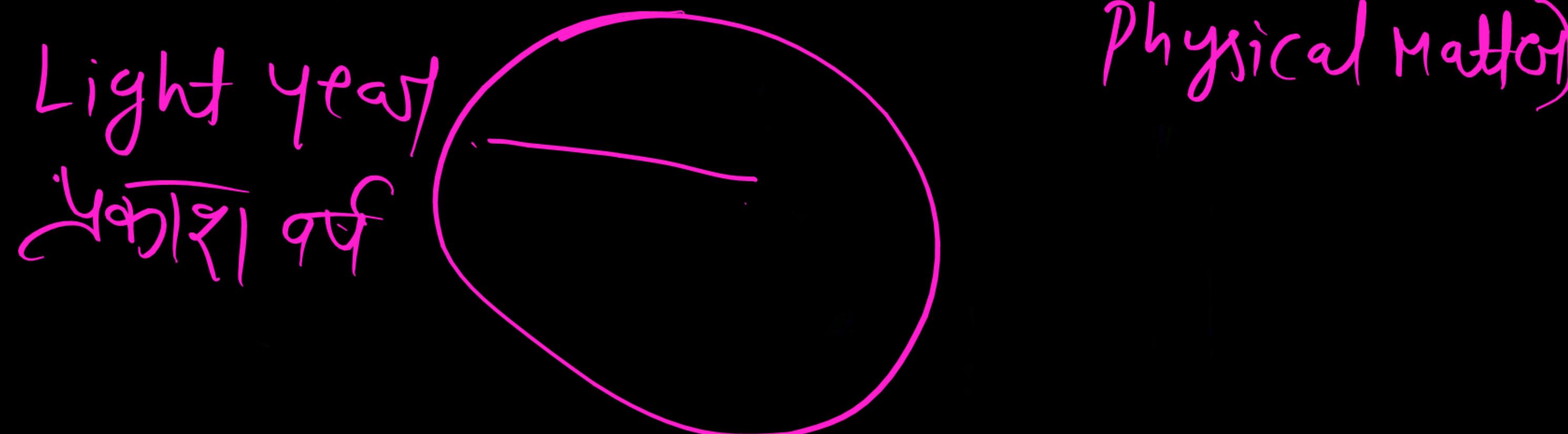
मृदु विद्युत



2.3

Universe

Totality of Everything (All energy, Time,
Physical Matter)



Light Year

४९८१७५







Universe



Concept of Revolution

CDS

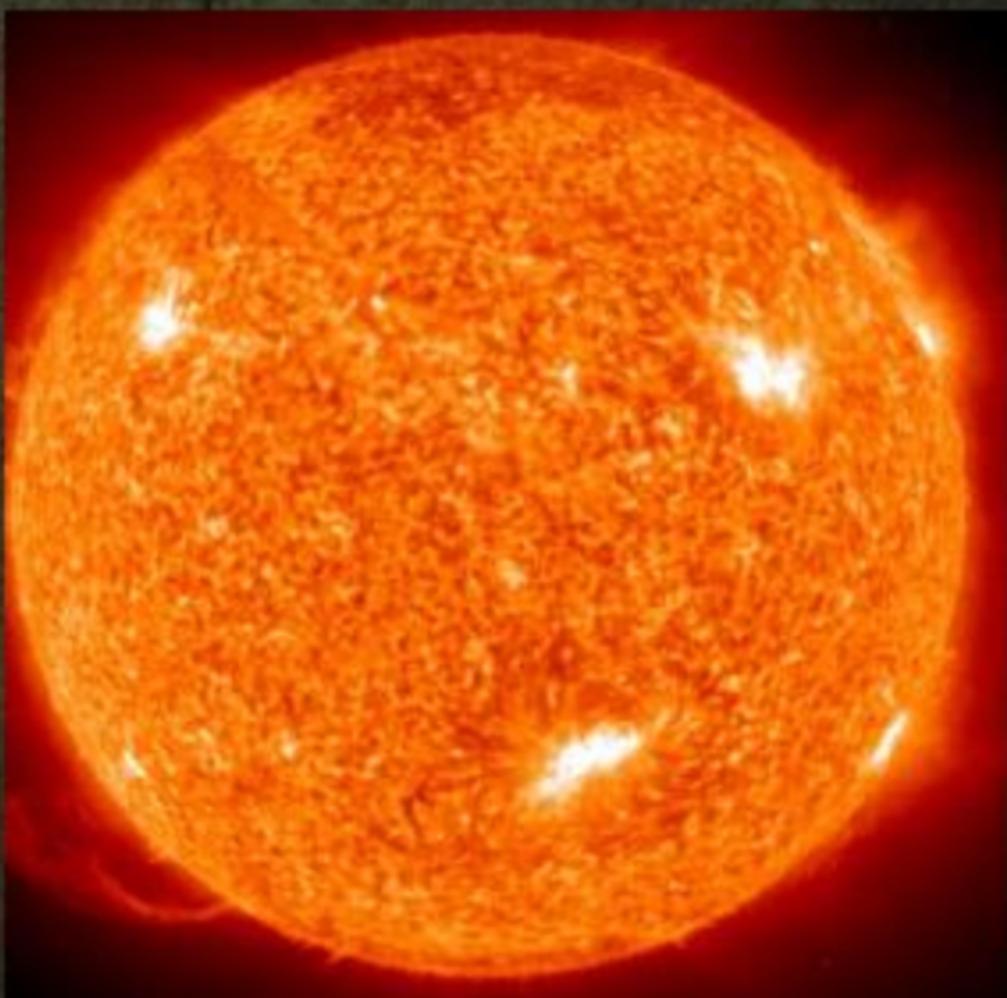
Ptolemy

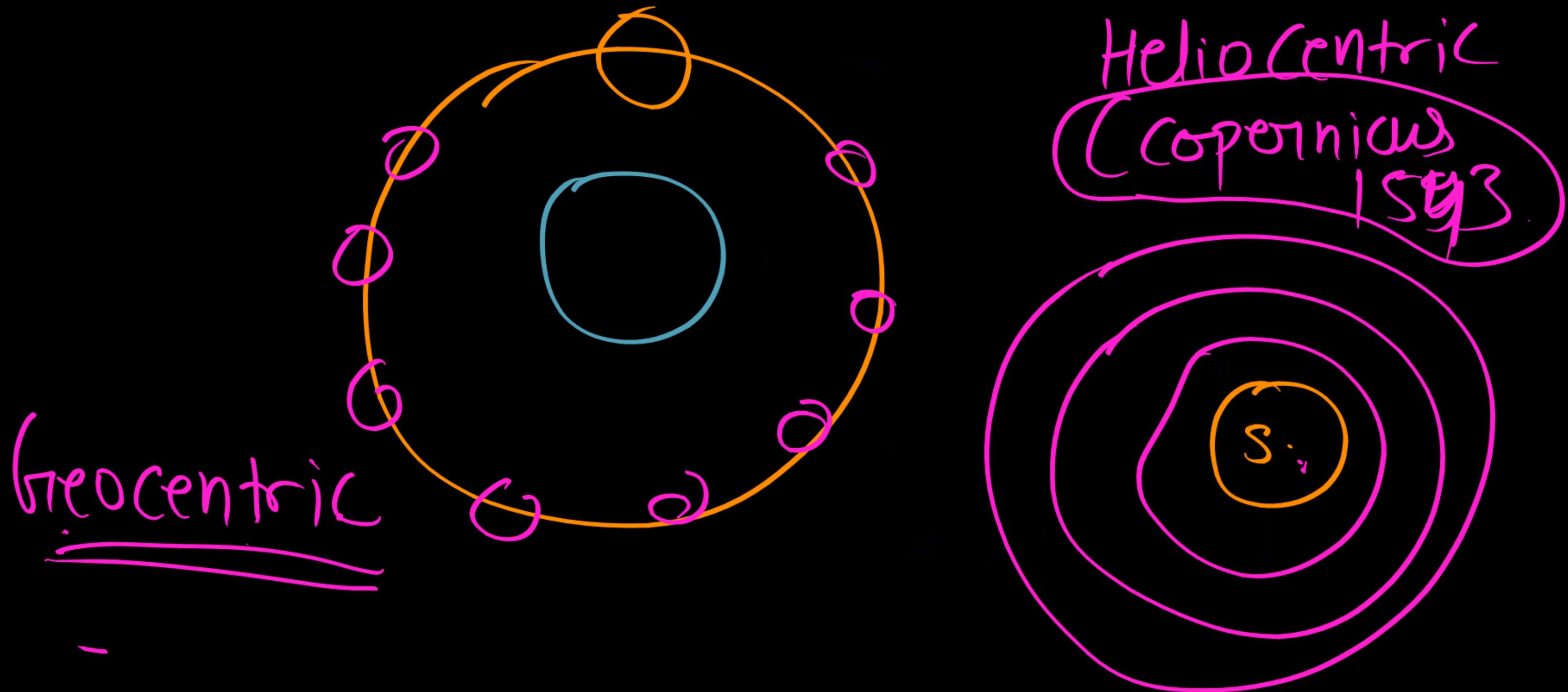
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Geocentric

Heliocentric







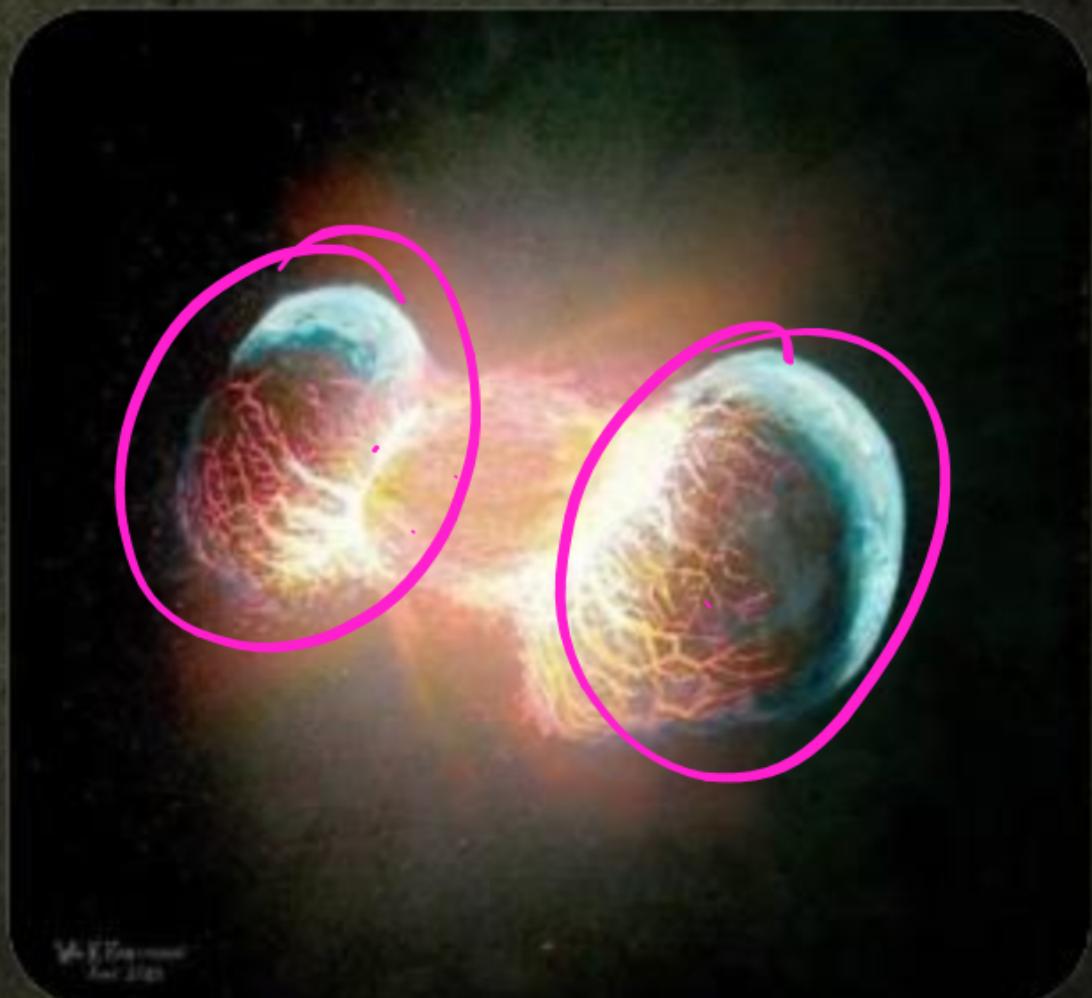
Universe



Origin of the universe on the basis of heavenly bodies

Monistic

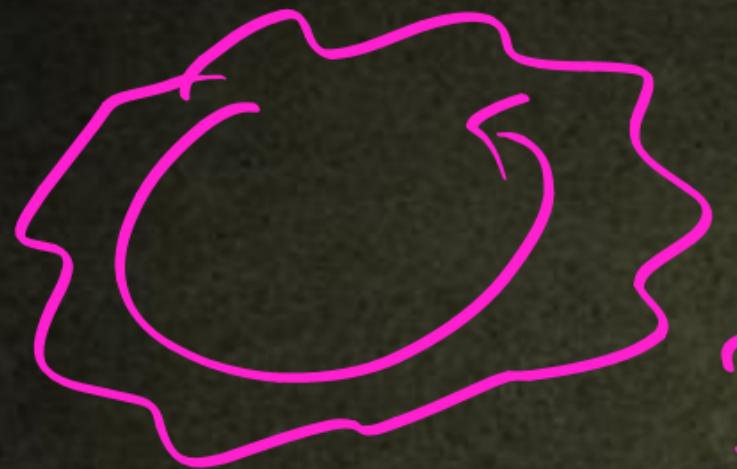
Dualistic





Gaseous Hypothesis

Immanuel Kant

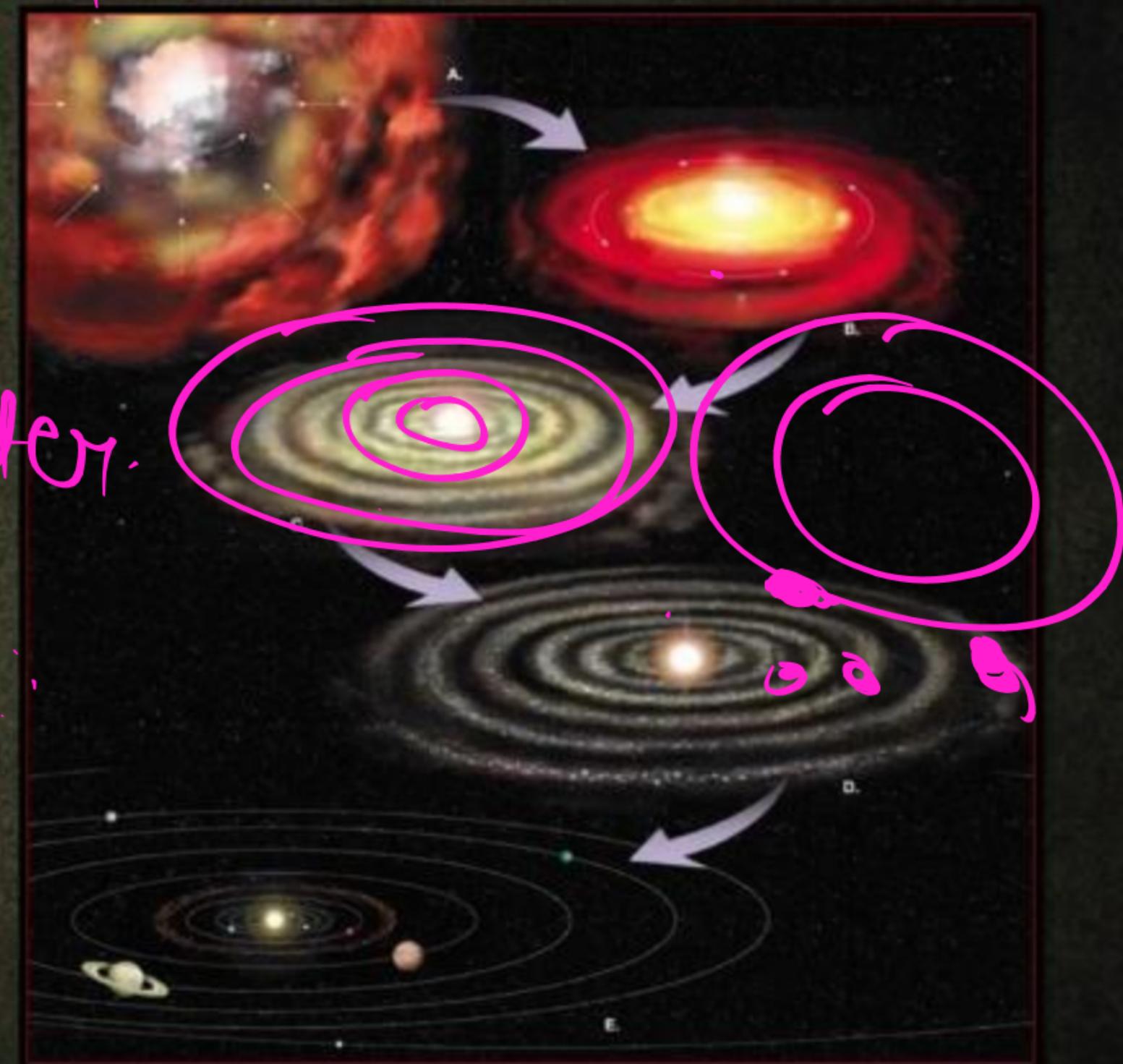


Nebula
theory

Ice, Gas, Water

9 Planets

proto planetary





Nebular Hypothesis Of

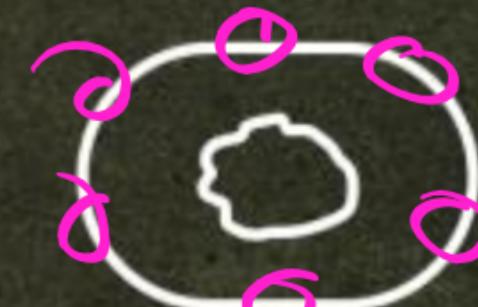
Laplace.

Nebula

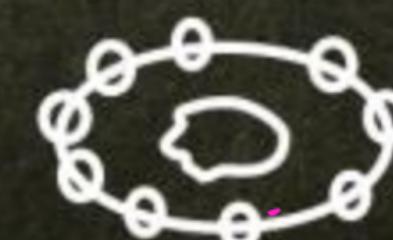


H, He

Rotation



One Ring Speed



9 Planets

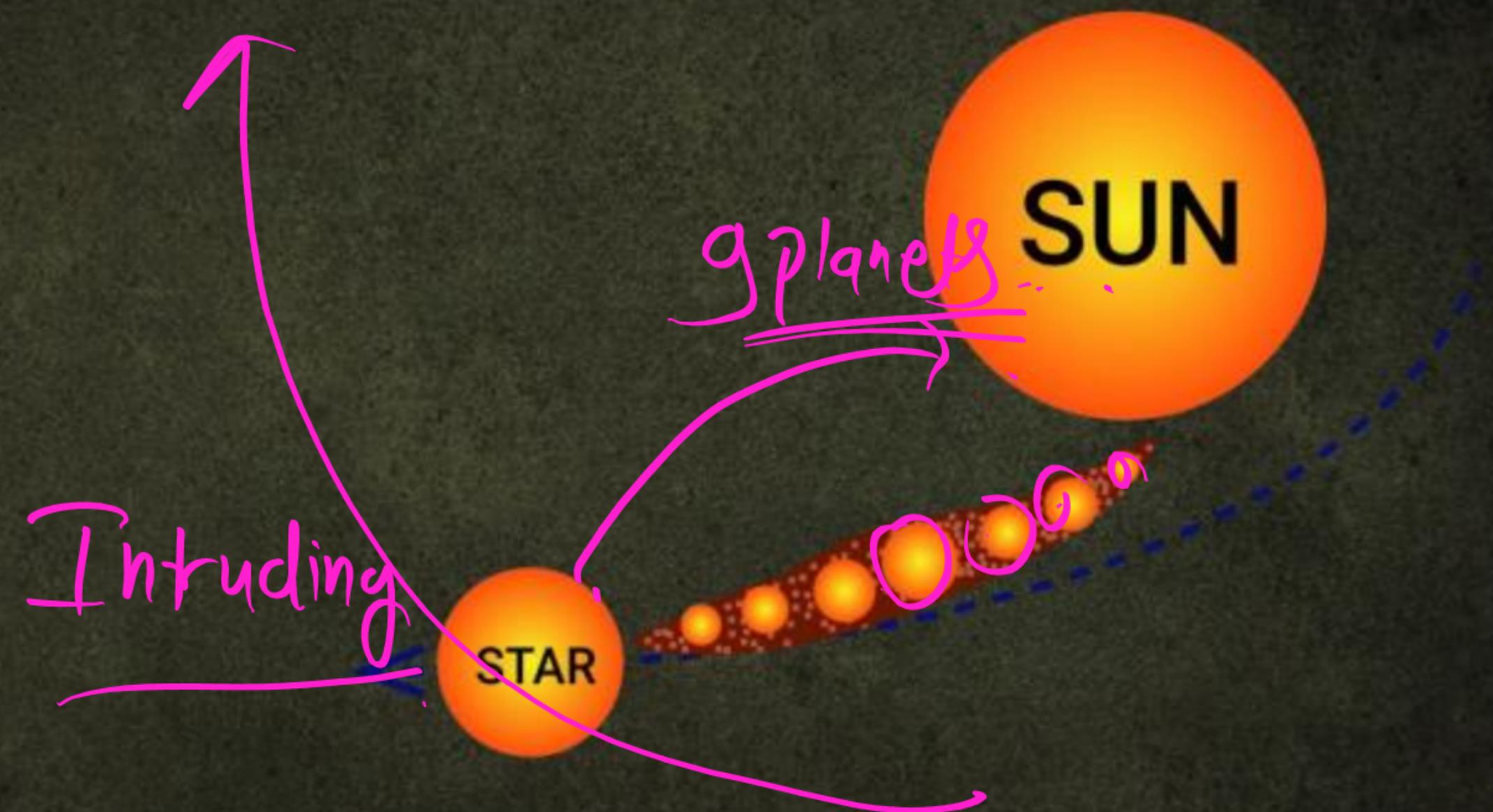




Planetesimal Hypothesis



Moulton & Chamberline

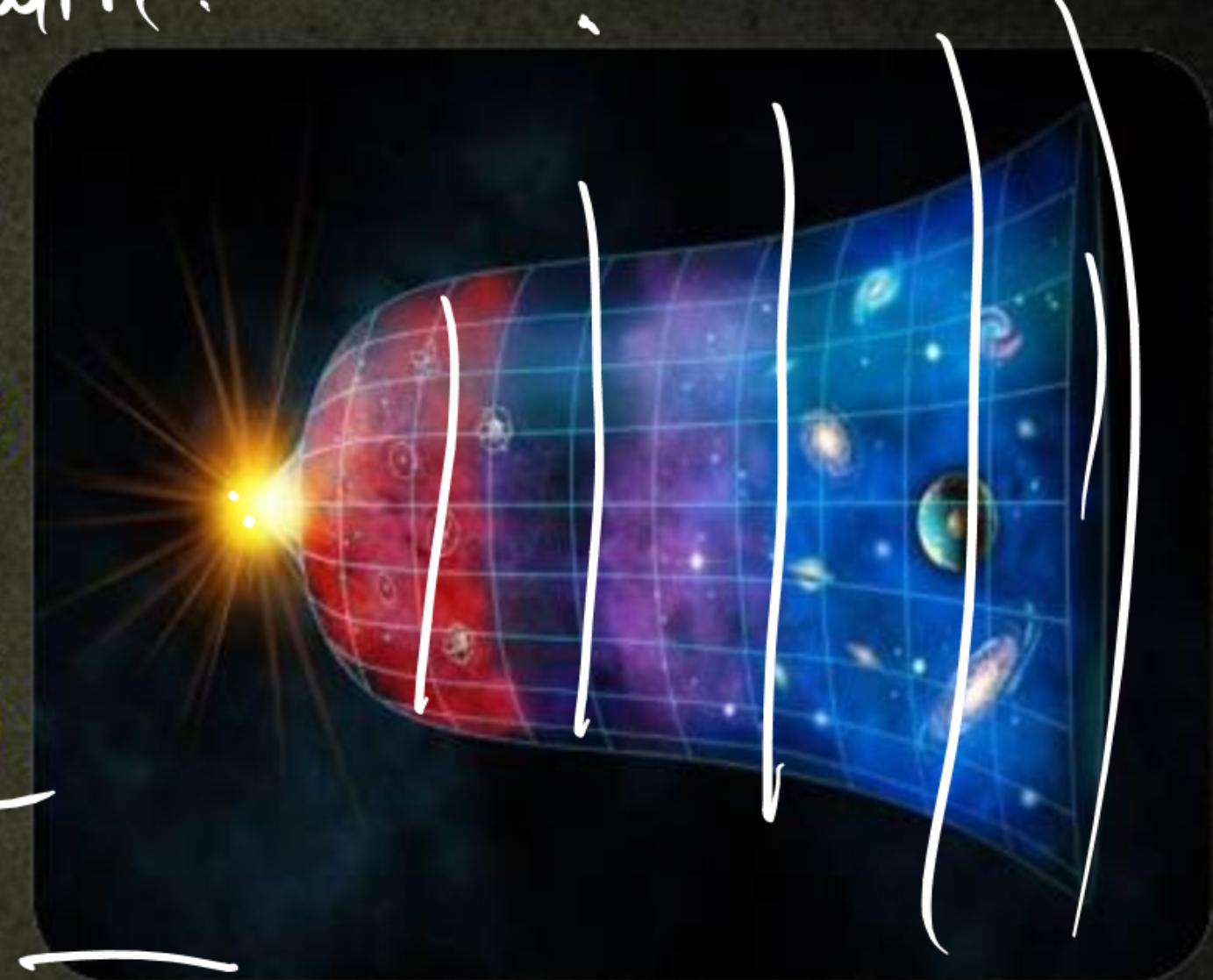




Big Bang Theory

George Lemaître.

- Tiny ball explode 13.6 billion years ago
- The expansion remains continue till date
- First atom was formed within 3 minutes.
- Within 3 lakh years from the Big Bang, temperature dropped to 4,500K (Kelvin) and gave rise to atomic matter.
- Condensation took place stars
- Accretion and planets are formed
- Distance between the star is measured by Light year.



U.S.N.I

136 billion

Tiny ball

∞ T
 ∞ P



Question

Consider the following statements about Light year:

1. Light year is a unit for measurement of very large distance.
2. Light year is a unit for measurement of very large time intervals.
3. Light year is unit for measurement of Intensity of light.

A 1, 2 and 3

B 2 and 3

C 1 And 2

D 1 Only

UPSC
CSE
(IAS)

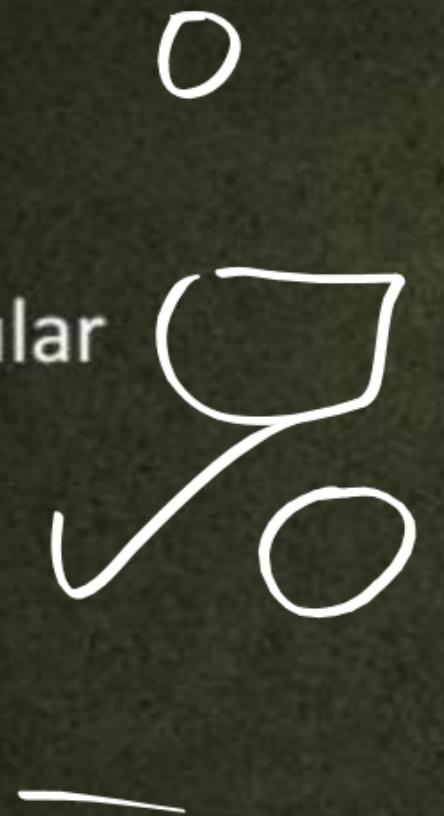
Question**Shape of earth is?**

A Circular

B Rectangular

C Geoid

D Flat





Galaxy

Assembly of Stars .

- A galaxy is a system of stars, their planets, interstellar gas, dust, dark matter, bound together by **gravity**.
- The Milky Way is our **home galaxy**.
- The Milky Way is **spirally shaped**.

CDS .
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X - A -

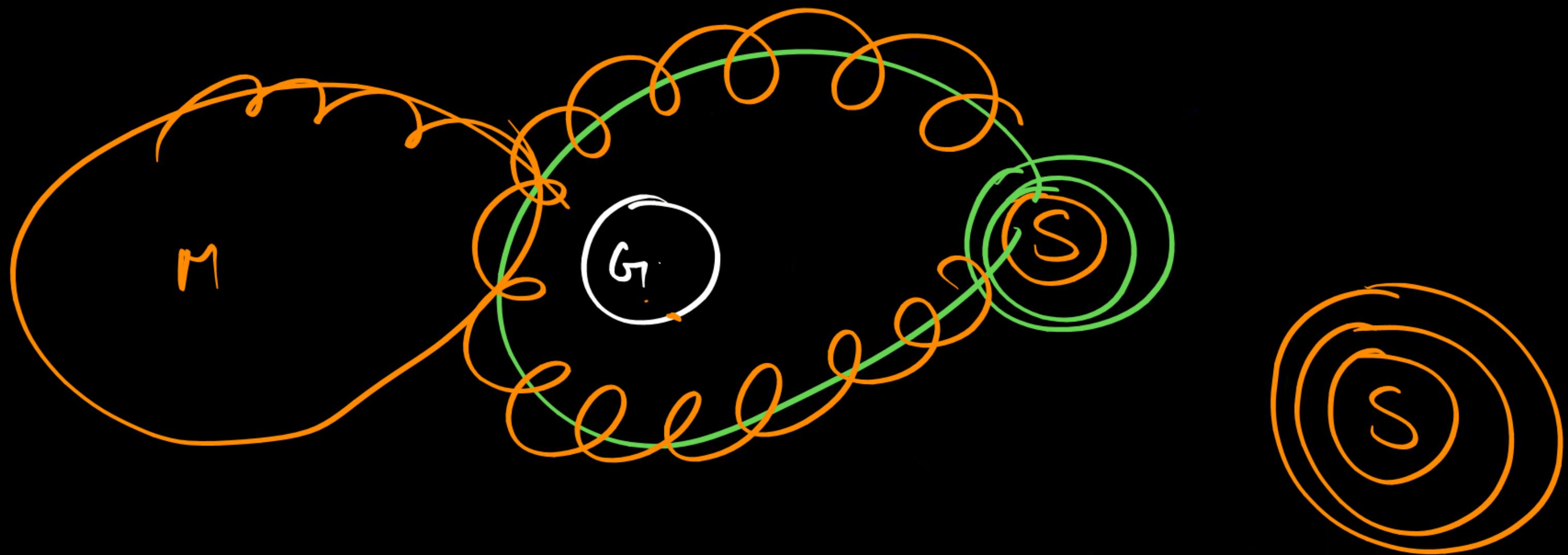


Our Milky Way Galaxy has a supermassive black hole and its centre is known as '**Sagittarius A.**'

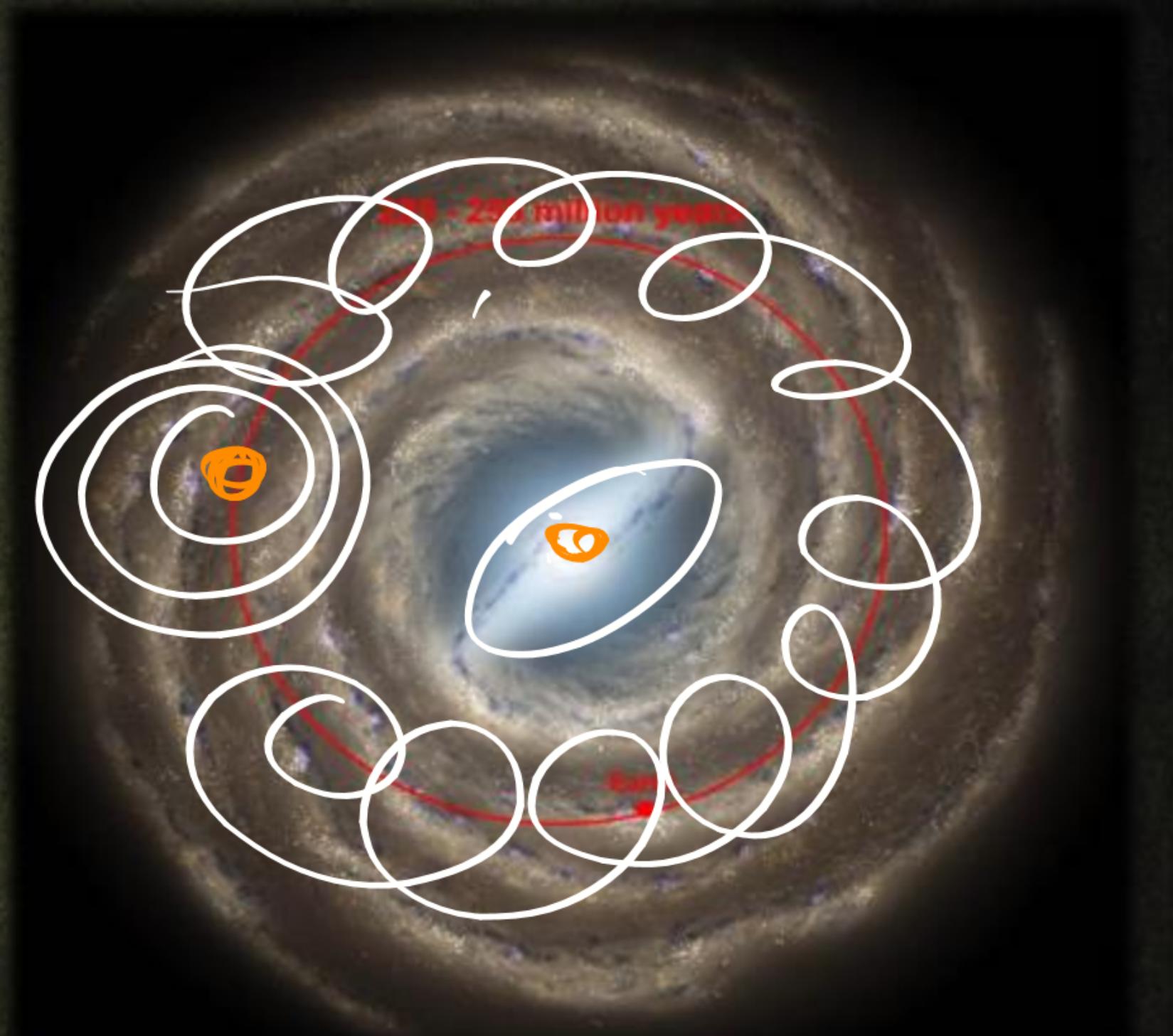
Galactic revolution ?

Our solar system lies in a **spiral shaped** galaxy called "**Milky way**".

The nearest galaxy from us(Earth) is called "**Andromeda**".

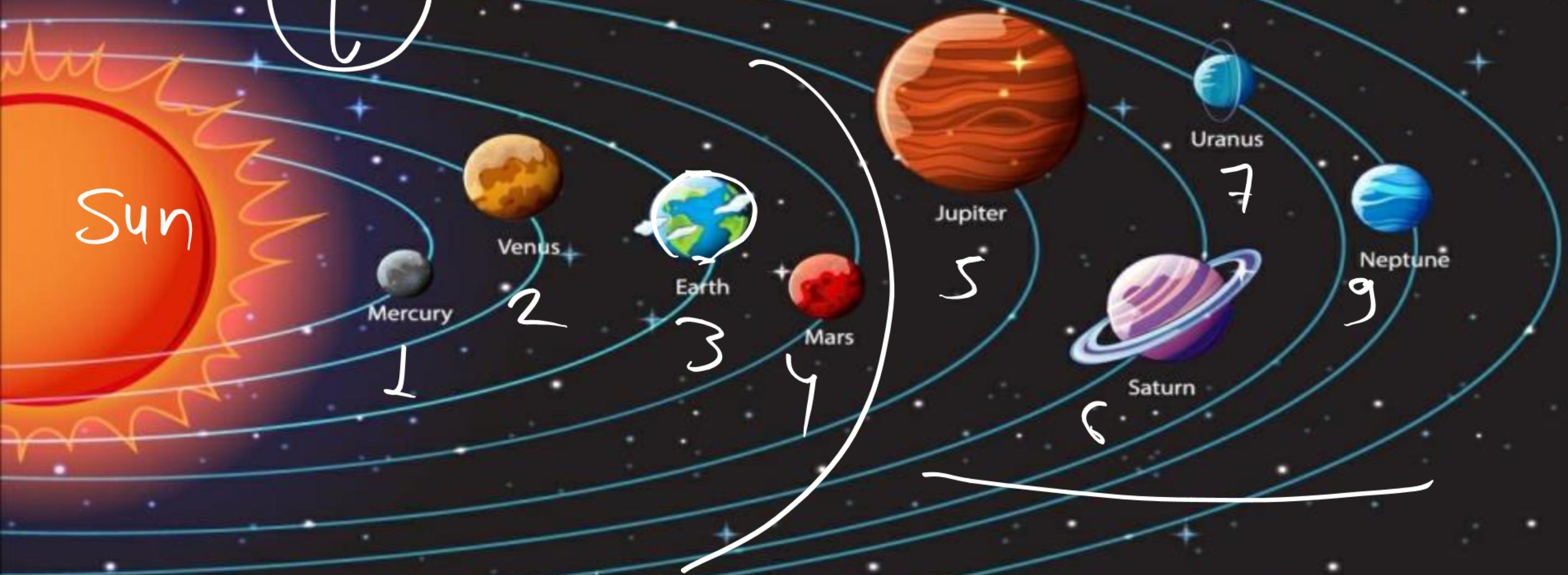


- ✓. Spiral have a central nucleus with great spiral arms.
- ✓. Elliptical without spiral arms.
- iii. Irregular with no shape



Solar System

(સૌર મંડળ)





The solar system

- ✓ The solar system comprises the Sun and 8 planets and their moons.
- ✓ Which are believed to have been developed from the condensation of gases and other lesser bodies. 85
- ✓ The size of solar system has been estimated about 10⁵ Astronomical Unit (AU).
- ✓ The Sun is at the centre of the solar system and all the planets revolve around it in elliptical orbit.
(SSSB) Small solar system bodies.



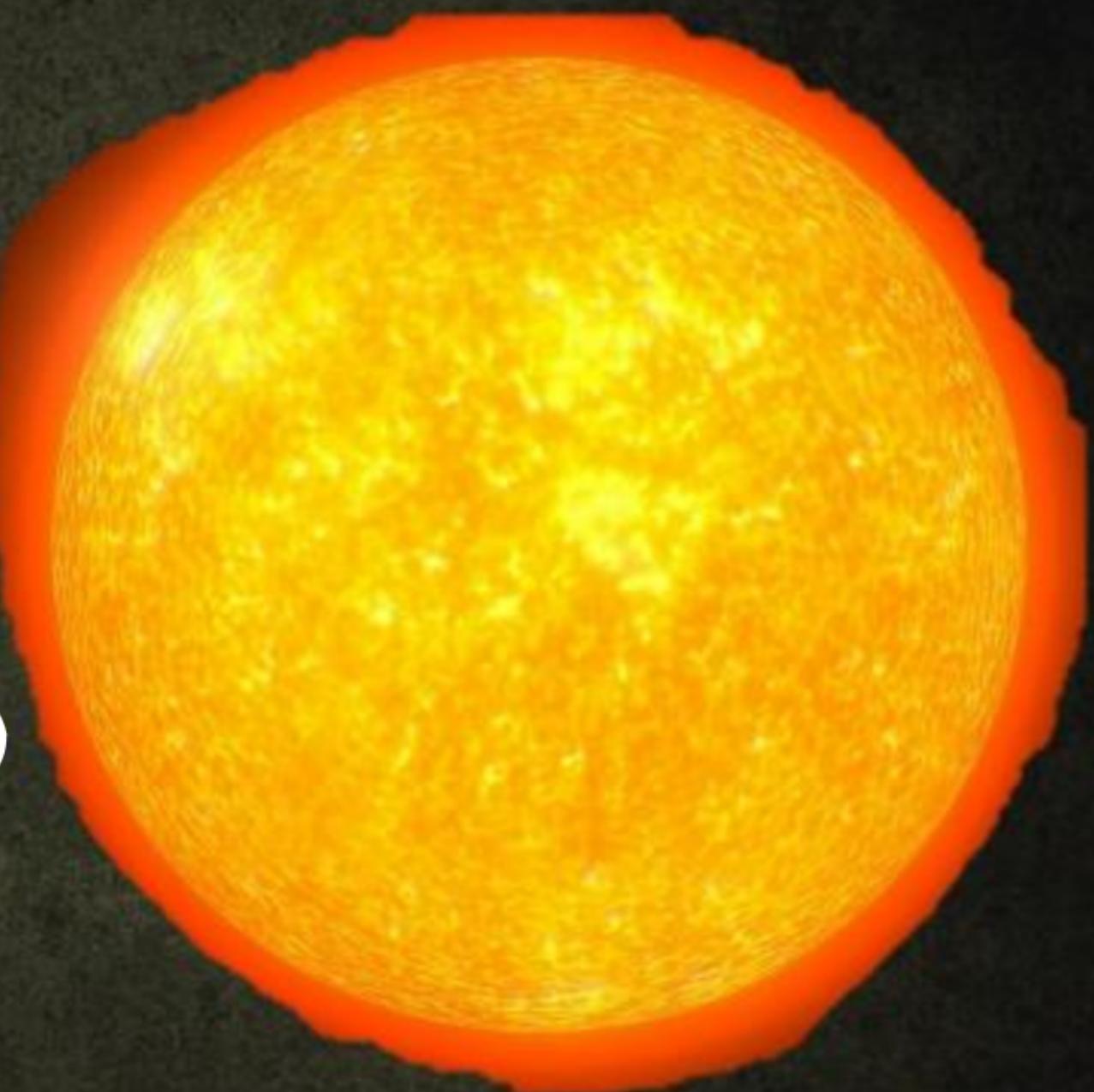
Moon, Asteroids,
Meteors



Star

99.1.

- The Sun accounts for more than 99% of the mass of the solar system and due to this, the Sun exerts immense gravitational pull to keep the planets rotating
- They are made up of gases.
- They have their own heat and light, which they emit in large amounts.
- These celestial bodies are called stars. The sun is a star.
- Nuclear fusion $\text{H}_2 + \text{He} \rightarrow \text{H}_2\text{O}$
- Countless twinkling stars in the night sky are similar to the sun.

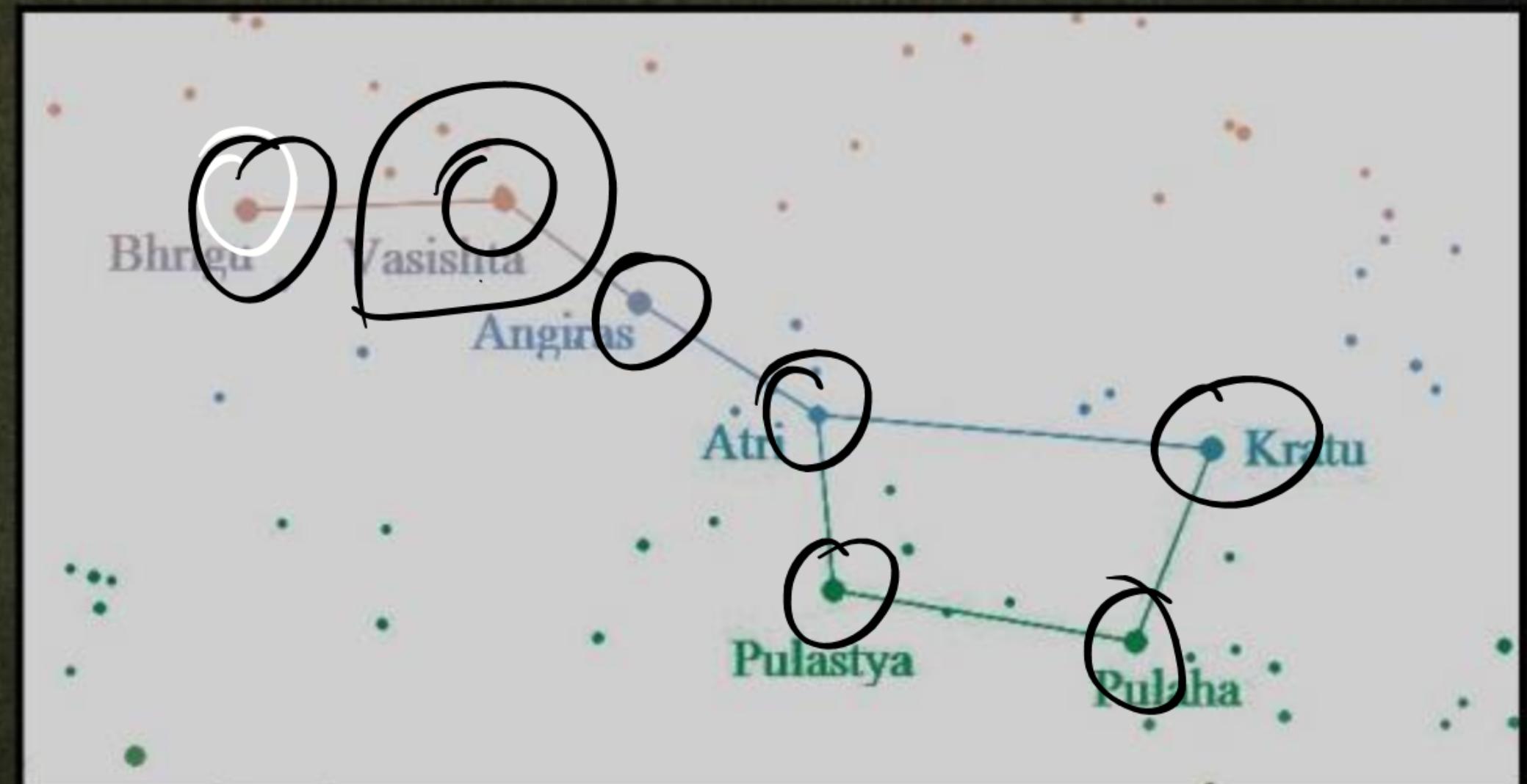




Constellations

नारो का समूह.

- While watching the night sky, you may notice various **patterns formed** by different **groups of stars**. These are called **constellations**.



P
W



Jai Hind