



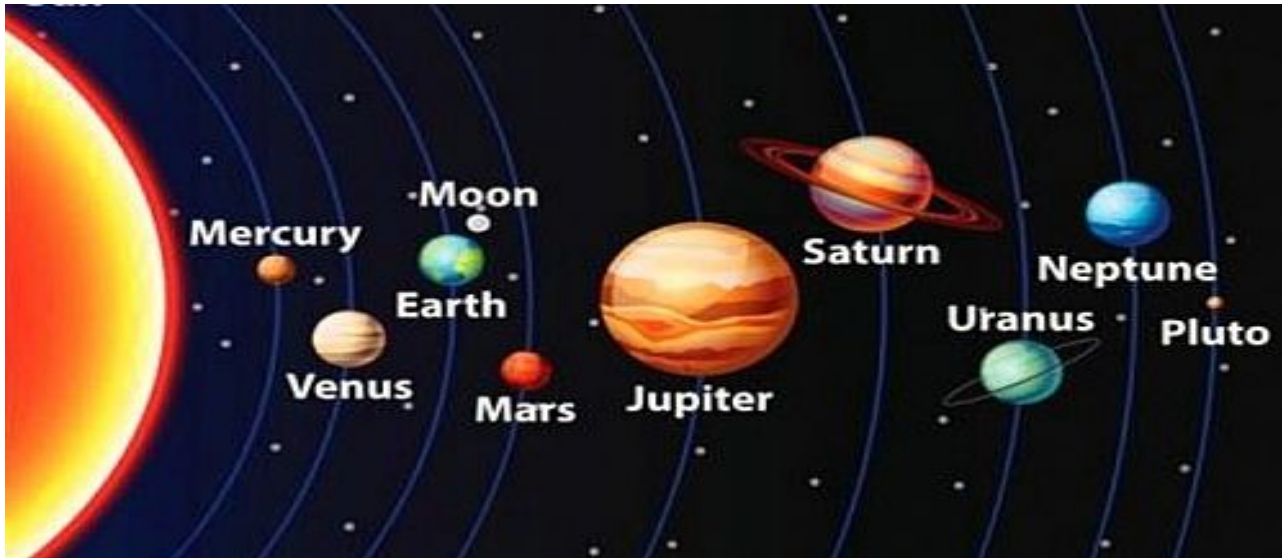
Earth and the Solar System

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Order of the Planets

My Very Excellent Mother Just Served Us Noodles

Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune



Solar System

Definition: Everything that is held by Sun's Gravity

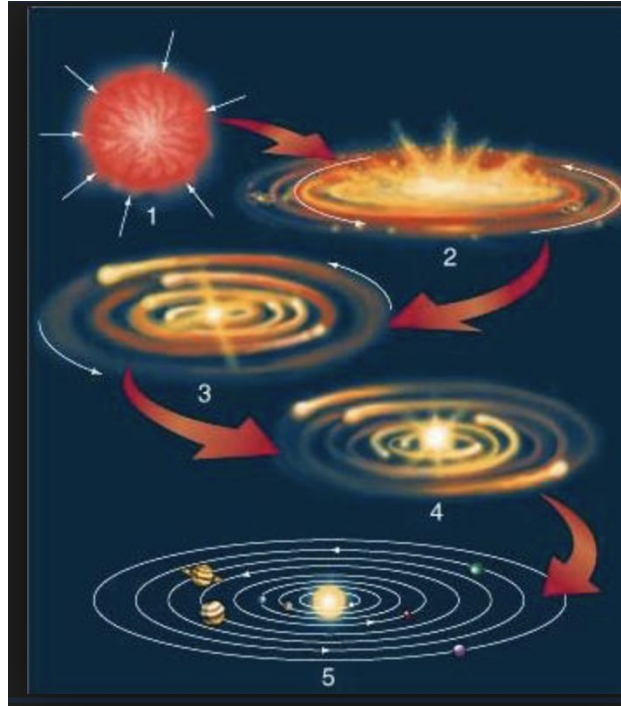
Planets: No official definition

- Orbit counterclockwise
- Inner planets are small and rocky
- Outer planets are enormous and gaseous
- Asteroid belt lies between Mars and Jupiter

How it was formed: About 4.5 billion years ago, gravity pulled a cloud of dust and gas together to form our solar system

The Sun

This is the star that the earth and the rest of the solar system orbit.

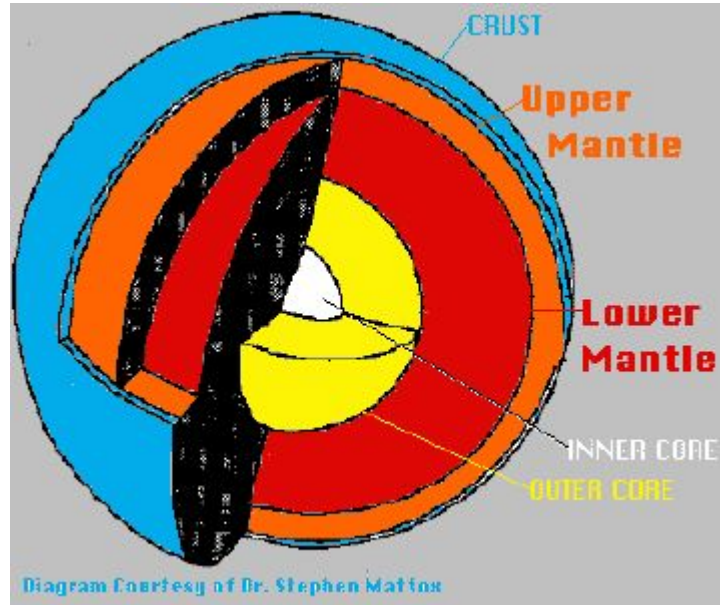


Planet Earth

A satellite view of the Earth from space, showing the Americas, Europe, and Africa. The image is used as a background for a list of characteristics of Earth.

- Largest terrestrial planet
- One large moon
- Only planet in the Solar System that is known to harbor life
 - Liquid water on the surface
 - Breathable atmosphere
 - Magnetic field (protects both water & atmosphere)

5 Different Layers



Earth Continued...

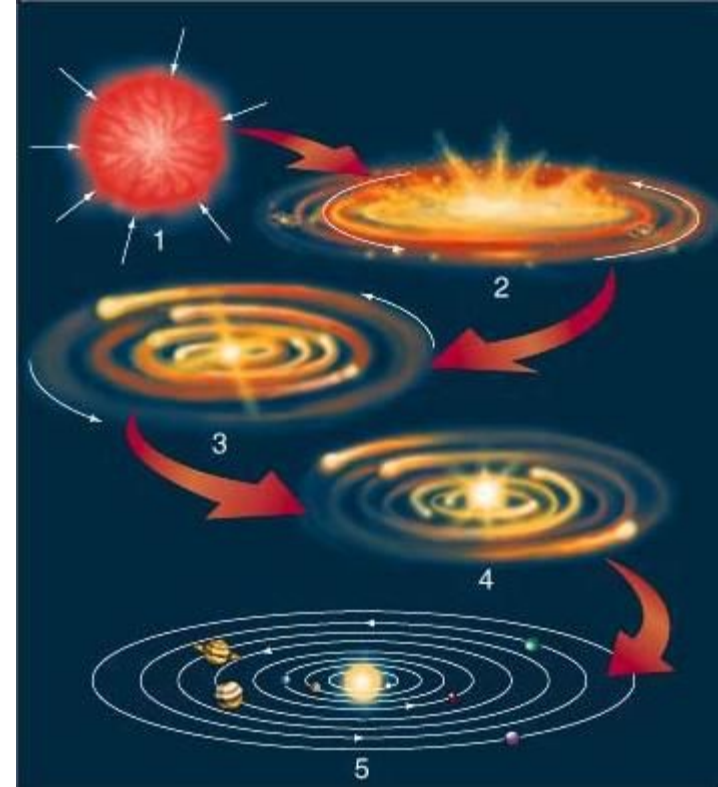
- **Tectonic Plates:**
 - Crust is broken up into these gigantic plates
 - Plates are driven by the flow of the mantle
 - Flow of the mantle (convection) is powered by internal heat
- **Volcanoes:**
 - Located in hotspots or weak spots between plates
 - Create new land as materials exit the Earth's interior
 - Pump gas out of the Earth
 - A vast majority of Earth's atmosphere originates from volcanoes
 - **Why is the Earth's core hot?**
 - Leftover formation heat
 - Gravity's pull/squeeze (pressure)
 - Decaying uranium (nuclear energy)
 - Friction

Earth Continued Part 2

- **Magnetic Field:**
 - Outer core is liquid metal; therefore, it conducts electricity
 - The liquid convects and this motion generates the magnetic field
 - Magnetic field deflects harmful solar rays/wind and as a result it protects water, the atmosphere, and life itself.
- **Earth's atmosphere:**
 - 78% Nitrogen, 21% Oxygen, 1% other, + water vapor (clouds)
 - Warmest at the bottom

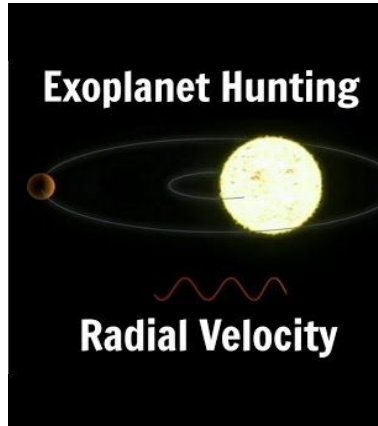
The Birth of a Star

- Our Solar System was a big ball of gas
 - Mainly hydrogen and helium
- It got pulled together by its own gravity
 - The pressure made atoms push around with a greater force than the repulsion force between atoms
- Nuclear Fusion

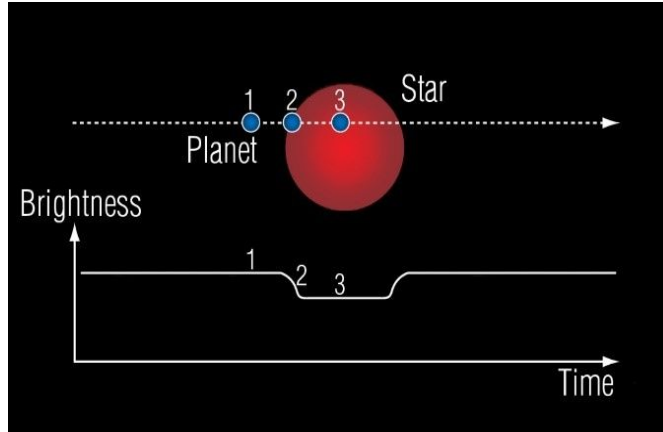


Methods of Finding Planets

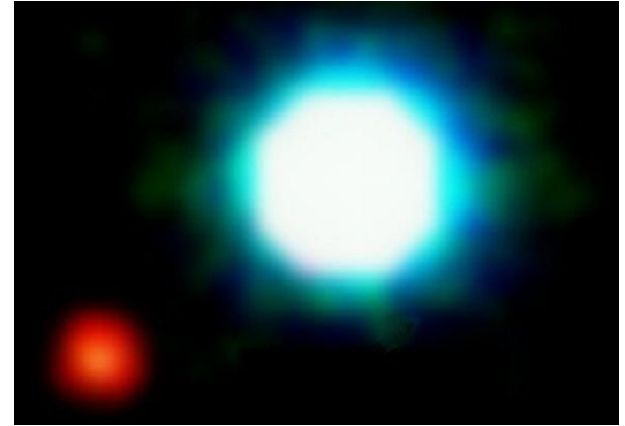
Radial Velocity



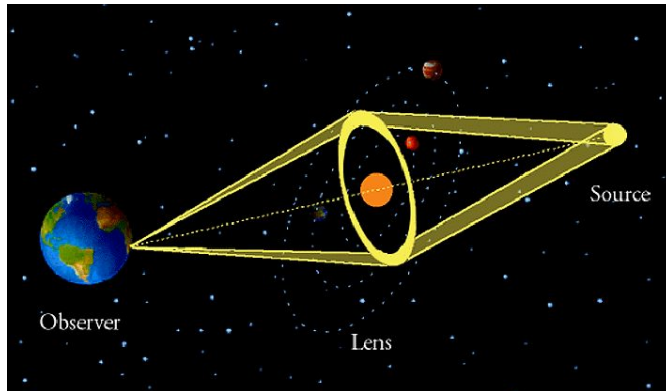
Transit



Direct Imaging

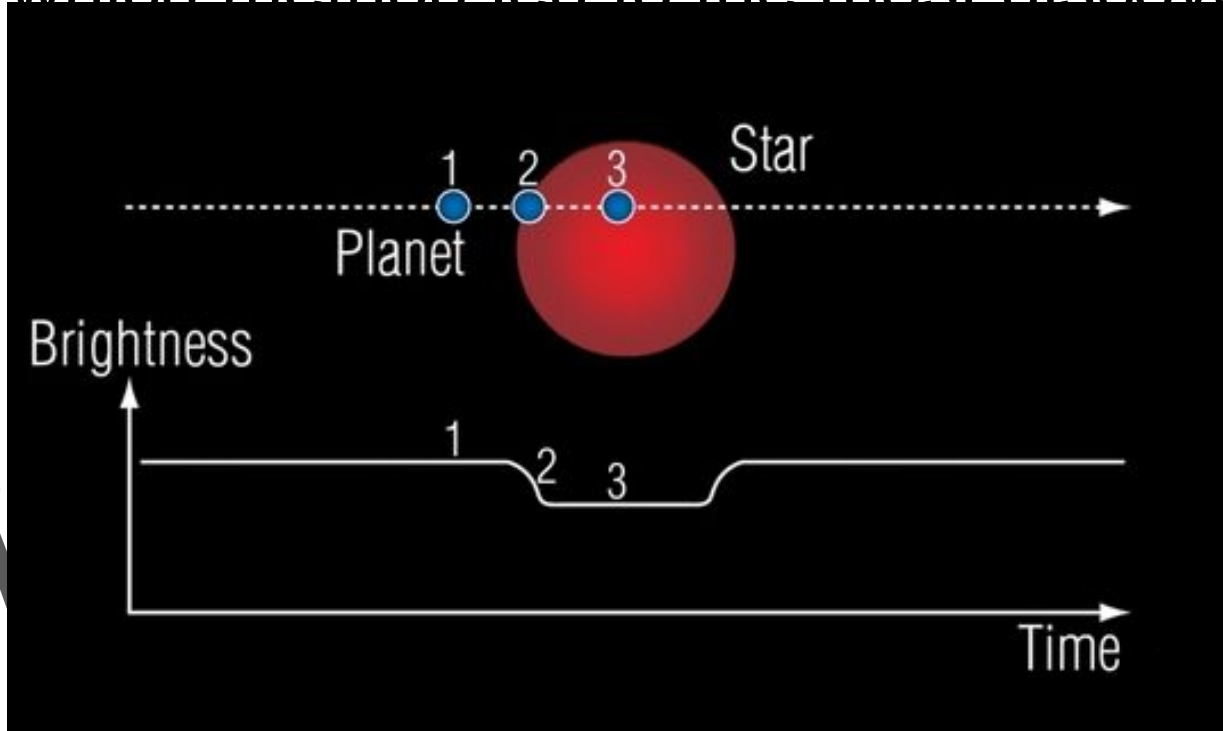


Gravitational Microlensing



Astrometry

So which method led to the most discoveries?



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**Thank You
for
Listening!**