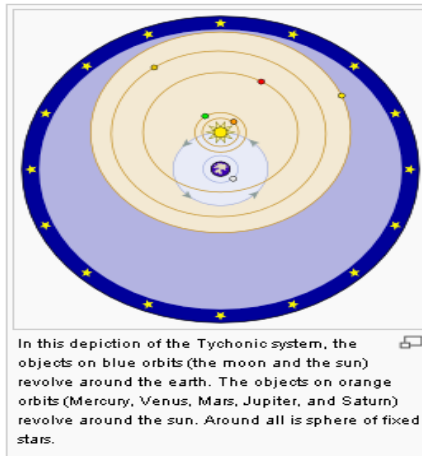


Tycho Brahe (1564 - 1601)

- made very precise observations and kept the most accurate records of the positions of the stars and planets

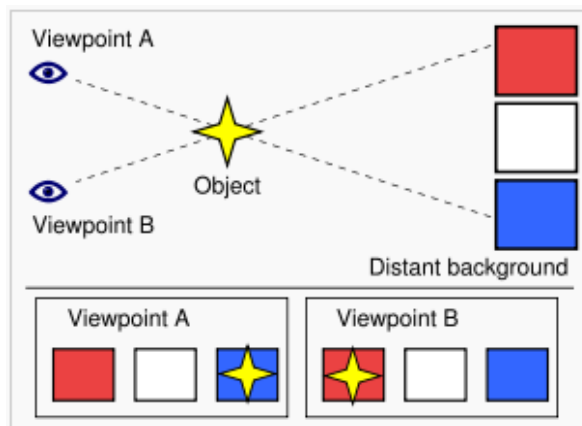
- did not believe in Copernican System (Sun centered), because he could not detect Stellar Parallax, the apparent shift in a stars position relative to the background stars due to the motion of the Earth around the Sun

Tycho's Geo-heliocentrism



- Parallax can only be detected with telescopes because of the great distances of the stars from Earth

- Formula for parallax, $R = 1 / \theta$
where R is distance in parsecs (3.26 light years) and θ is the parallax angle measured in seconds (")



Johannes Kepler (1571 – 1630)

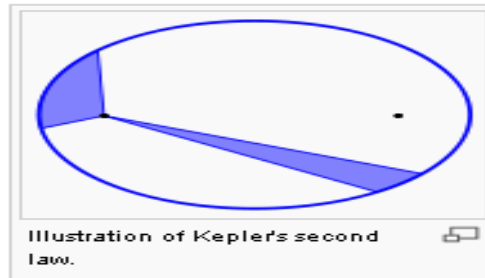
- Assistant to Brahe
- Used Brahe's data to develop three laws of planetary motion

1st Law – Planets travel in elliptical orbits with the Sun at one focus



2nd Law – Equal Area Law

- Planets will sweep through equal areas of space in an equal period of time
- Planets travel faster when closer to the Sun (Perihelion) and slower when farthest from the Sun (Aphelion)



3rd Law – Harmonic Law $P^2 \propto a^3$

- the further a planet is from the Sun, the longer it takes to orbit
- P = period of orbit (years)
- a = distance of planet (AU's)
 - An AU is an astronomical unit, or the average distance between the Earth and the Sun which is about 150,000,000 km or 93,000,000 miles