Answer on Question 55239, Physics / Astronomy | Astrophysics

Question:

Explain the contribution to astronomy that each of the following made: Copernicus, Brahe, Galileo, Kepler, Newton.

Solution:

Copernicus first wrote the De Revolutionibus Orbium Coelestium, where he set forth the heliocentric model, indicating that Mercury and Venus are inside the Earth's orbit of the Sun and that Mars, Jupiter and Saturn are outside the Earth's orbit.

Brahe amassed a huge collection of data regarding the position and motion of planets at his observatory Uranaborg.

Galileo: First practical use of the telescope. Galileo's observations added support to the heliocentric model. Galileo observed phases of Venus, four Moons orbiting Jupiter (not the Earth), sunspots and irregular surface of the Moon. These observations dispelled the notions of celestial perfection and that all planets and satellites orbit the Earth.

Kepler using Brahe's data, he correctly proved that planetary orbits are elliptical and not perfectly circular. He developed three laws to explain how the planets move, but not why.

Newton wrote Principia and Optiks. Explained why the planets move by developing the universal law of gravitation (a force of attraction exists between all objects with mass) and three laws of motion (law of inertia, F = ma and for every action force there is an equal and opposite reaction force). Newton also explained that white light is composed of a series of colors, most easily recognized as roy g biv).