

Astronomy essay sample

[Environment](#), [Earth](#)



How were Uranus's rings discovered?

William Herschel was the first observer to mention that Uranus has a ring system in 1789. It was only a speculation since the astronomers that time could not observe any rings around Uranus. The discovery of the Uranian ring system was observed almost 200 years later by James Elliot, Edward Dunham, and Douglas Mink in 1977. The discovery of the ring system of Uranus was only an accident when they grabbed the opportunity to observe the atmosphere of the planet using the occultation of the star SAO 158687. In their observations, they found out that the star suddenly disappeared for five times before it passes through the planet's surface. The disappearance were name as the five rings of Uranus. After the discovery, Voyager 2 spacecraft captured the image of the rings of Uranus and found out that there are actually 9 rings around the planet (Esposito, 2006).

What causes the Aurora Borealis and Aurora Australis?

An aurora is an observable natural light that could be seen in the sky of the Polar Regions. It could only occur at the geomagnetic poles and is most observable at night due to the dark sky. The Aurora Borealis is also called the northern lights that occurs in the northern region while the Aurora Australis is the southern lights and occurs at the southern region. The main cause of the Aurora is the ionization of the charged particles entering the atmosphere. The charged particles which are mainly composed of electrons and protons become excited due to the atmospheric constituents which created the optical emissions. It only occurs at the Polar Regions since the solar winds which accelerates the charged particles interacts with the Earth's

Magnetosphere. This causes the distortions due to the geomagnetic disturbance then causes the ionization and excitation of the atmospheric constituents (Chaisson, 2005).

What causes the Doppler Effect? Why is it so important for the study of astronomy?

The Doppler Effect is the observed change in the frequency or the wavelength of the waves that comes from a moving object relative to the observer. It was first proposed in 1842 by Christian Doppler then it was named after him. The most common observation of the Doppler Effect is the sound that is heard from a moving vehicle. The siren that is heard from the vehicle approaching to a person is accelerating while it precedes when the vehicle is travelling away from the observer. In astronomy, the Doppler Effect is very important in the observations of the stars and the other heavenly bodies. It could be used to observe the radial velocity of the galaxy or the stars. The radial velocity is the speed at which the star or the galaxy is approaching or receding to the earth. It could also be used to measure the rotational speed of the stars and detect if the star has a close binary system (Beatty, 1999).

What observations did Galileo make that supported a heliocentric model?

The heliocentric model was first proposed by Copernicus which argues that the Sun is the center of the solar system and not the earth. Galileo build his own telescope to observe the heavenly bodies visible from the earth. There are three main observations that Galileo made to support the heliocentric model. First is the discovery of the four moons of Jupiter. The discovery of

the four moons of Jupiter proved that there are other heavenly bodies that did not revolve around the earth. The second observation is the phases of Venus. Like the moon, there are different phases of the Venus. However, when Venus is at its full phase, it suddenly disappears. Galileo proposed that Venus is actually behind the Sun contradicting the geocentric idea that Venus is closer to the earth than the Sun. Lastly, Galileo observed the retrograde motion. The retrograde motion is the apparent motion of the planets during its revolution around the sun (Kuhn, 1996).

References:

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