

Cape Cod Astronomical Society

Minutes of the January 9, 2014 Meeting

Attendance: Total: 20 Members: 16 Guests: 4

President Mike Hunter opened the meeting at 7:33 P.M. and welcomed members and guests. Mike informed members about the upcoming February and March meetings and also brought us up to date about usage of the 32 inch Dobsonian telescope that is housed at the Harwich school system.

The program for the evening featured a very interesting presentation by CCAS member Warren Mumford. Warren has an extensive background in physics. He has a PhD in physics and worked as a researcher for International Paper and more recently as professor of physics at The Storm King School in New York State. The presentation was entitled “ A Bit About Orbits “. These are very complicated theories usually understood only by scientists. Warren was able to convey these theories in a manner that did not require the listener to have a scientific background. Through the use of calculations and analogies he was able to explain these principals from the 16th century up to the current space program.

Orbital theories have been around for many centuries. However, it was not until the German astronomer and mathematician Johannes Kepler put forth his three laws of planetary motion that real scientific proof was available. He was born in 1571 and like many astronomers of his time also believed in astrology. His three laws were the basis for many orbital laws as follows:

- 1- Each planet moves in an elliptical orbit, with the Sun at one focus of the ellipse.
- 2- A line from the Sun to each planet sweeps out equal areas in equal times.
- 3- The ratio of the squares of the orbital period for two planets is equal to the ratio of the cubes of their mean orbit radius.

Warren next introduced us to the work and laws of Isaac Newton. This included the law of universal gravitation and Newton's Cannon, which was a “thought experiment” he used to explain the principal of orbits around the earth. The rest of the presentation involved more modern cosmological concepts such as the idea that a black hole must exist at the center of our galaxy (The Milky Way). Additionally, Warren discussed the concepts of Dark Energy and Dark Matter, concepts posing that “dark” mass and energy must exist in the universe beyond mass and energy which we can “see” from elements which give off light of various wavelengths.

Observatory Report

Bernie Young told members about a Sun spot that is the cause of auroras that may be seen in the next few days

The meeting was adjourned at 9:03 P.M

Respectfully submitted,

Charles Burke