

Delmarva Stargazers Meeting

July 6 2010

Don Surles lead the meeting in the absence of the President, Jerry Truit.

New business:

- The web site has the PDF form for the October 37, 2010 'No Frills Star Party'
- We have new planisphere's for sale to members for \$4. These are the 'The Night Sky Planisphere' by David Chandler. They have the unusual feature of showing the southern sky on the back without the distortion of common planisphere's.
- Member Observing reports:
 - Doug Norton said on his recent outing he saw Jupiter, Saturn, Mars and in near perfect seeing Venus. Initially it was cloudy at the Blackbird State Forest but it cleared completely. The Veil was excellent, The Whale galaxy NGC 4631 in CVn (Canes Venatici).
 - Karen Jennings saw NGC 6210 "the turtle nebula" a planetary nebula (PN) in Hercules as well the Dumbell PN (NGC 6853) in Vulpecula with averted vision ("Imaginary Vision" as Don Surles called it).
 - Karen pointed out it is hard to 'observe' the Stargazers viewing area and suggested sponsoring a sign at the entrance. It is possible to rent land in the forest for the Stargazers. Moreover it would be best to have some land away from the road for safety.

Don Surles Presentation: Collimation of a Newtonian Telescope

- Centering the secondary spider: cut out a circle the diameter of the inside of the tube. Place a hole in the exact center (making the circle with a compass helps) Place this in the telescope tube to ensure the secondary holder screw is centered on the hole.
- Ensure the secondary is centered under the focuser – this is used to center the secondary both backwards and forwards as well as rotationally.
- Using a centering eyepiece (an ancient 35mm film canister was used in the past) with a small hole in the center of the canister center the primary with the secondary. A Cheshire eyepiece is the modern day tool of choice. It helps if the primary mirror has a centering ring on it.
- A centering ring is done again with a cardboard circle the size of the primary mirror. Mark the position of the hold using a Sharpie pen and use that to center a notebook re-enforcement hole on the mirror.
- A laser can be subsequently used to collimate the telescope by sending the laser light down the tube and back. When aligned the laser beam will intersect with itself. This is probably 'good enough'.
- (Ed. - This has too much error according to Dr. Bill Hanagan and should only be used for aligning the secondary on the primary – a Cheshire EP should be used to complete the alignment. Purists will then align on a after that.)
- There is a collimation movie at <http://www.andyshotglass.com/Collimating.html>

- Ed. - There is also a device called the The Blug™ the Barlowed collimation plug favored by some members that project an image of the mirror's central collimation mark on the Blug itself. This differs from the reflection of the large speculated reflection of the laser beam in its accuracy – thanks to Tim Milligan for this detail. See <http://www.collimator.com/blug.htm> for details.

Michael Borgia's Presentation: The Herschel Space Telescope

- Currently the world's largest space telescope. Launched by the European Space Agency to study the universe in the infrared
- Infrared wavelengths where most of the astronomical light exists where galactic dimming only allows infrared through and extreme red shifts of galaxies pushing the light into the infrared. As wavelengths grow longer the telescope must be larger for good resolution.
- This telescope requires cryogenic cooling and therefore has a limited life span. The James Webb telescope, in contrast, uses no cooling but has a longer lifetime. As a consequence of these differences the Herschel telescope sees farther into the infrared than the Webb.
- It will orbit at Earth's L2 (second Lagrange point) position. This is dynamically unstable but does allow the telescope to orbit the position about 1.5 million kilometers from earth free of any large heat sources like the earth and moon.
- It's mission is to study early galactic evolution.
- The 3.5m primary mirror design is Ritchie-Chretien and constructed of silicon carbide with a glass secondary and will operate at -271°C (2°Kelvin). The cryogenic cooling uses 2,000 liters of liquid Helium.
- Instruments: HIFI – imaging for the far infrared, PACS camera and spectrometer, SPIRE – spectral and photometric imaging. The PACS and SPIRE together cover 55 to 672 micron wavelengths. These instruments are further cooled to 0.3°K , colder than anything found in space.
- So far the telescope has resolved the 'cosmic fog' of infrared radiation to be previously unseen galaxies. It has discovered that Hydrogen Fluoride is everywhere in interstellar gas clouds which may be a tracer for detecting star forming regions. It turns out HF is a better tracer than the traditional carbon monoxide (CO). (Ed. It's interesting to note that Fluorine is believed to be relatively rare since it's believed to only be formed by certain large Wolf-Rayet stars and during supernova when a neutrino hits an atom of neon)

Don Surles Presentation: The Constellation Cygnus:

- Some featured objects: M 29 (open cluster) aka The Cooling Tower, Blinking planetary nebula, Veil (several parts), North American Nebula, Pelican Nebula.
- Also known as the Northern Cross.
- The Veil, a supernova remnant, has several parts with the most well known being designated NGC's 6960, 6979, 6992 and 6995. The most prominent is 6992 to the west, the next, 6960, is easiest to find near the 4th mag. Star 4 Cygni, and the

triangle, 6979. The triangle also contains 6995. Collectively they are the Cygnus Loop.

- The Blinking Planetary gets its name from using averted vision to see the nebula; the central star blinks in and out of view.
- Mythology
 - Queen Cassiopeia's pet
 - Swan is Cionus, son of Neptune, wrestled to the ground and smothered by Achilles
 - Orpheus the musician, murdered by Thracians under the influence of Bacchus (of wine fame).
 - Jupiter took this form to deceive Leda, by whom Jupiter fathered Pollux.
 - Apollo, who drove the sun across the sky each day, had a friend Sthenelus. Sthenelus's son attempted to drive the chariot across the sky but died in the attempt. Jupiter hurled a bolt of lightning at the chariot, killing Cygnus before he could scorch the earth. Sometimes the story involves Phaeton's chariot.