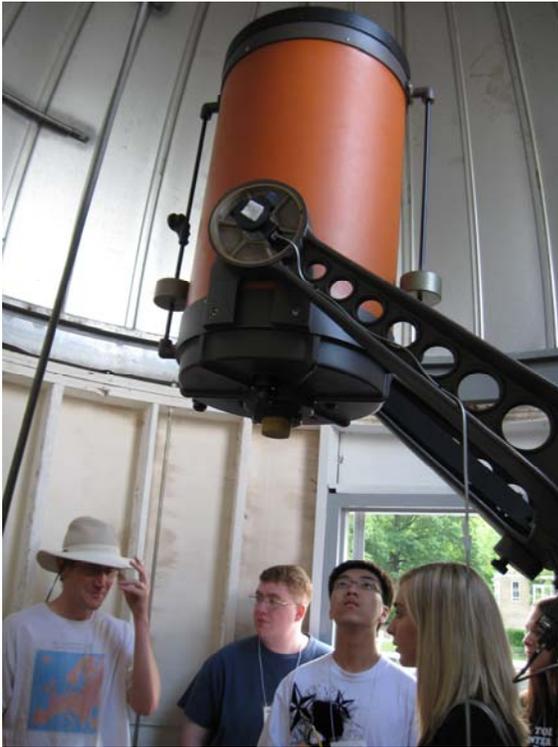


SHENANDOAH ASTRONOMICAL SOCIETY

July 2009



Students from high schools participating in the pulsar search collaboratory get to tour the observatory at West Virginia University. That is pulsar astronomer Duncan Lorimer wearing the hat in the picture.

STUDENTS SPEND SCHOOL YEAR SEARCHING FOR PULSARS

By Betty Wasiluk, Director, Berkeley County Planetarium, Astronomy Instructor, Hedgesville High School

I had the opportunity last summer to participate in the National Radio Astronomy Observatory's "Pulsar Search Collaboratory". Back in 2007, the Robert C. Byrd radio telescope was being repaired and could only point to a specific area of the sky. West Virginia University's husband/ wife

team of pulsar astronomers, Duncan Lorimer and Maura McLaughlan used the telescope to survey the sky by having the telescope point to the sky and receive signals from all over the sky. They ended up with 20 terabytes of data. This was too much for them to look through on their own. In 2008, Education Coordinator, Sue Ann Heatherly, at Green Bank wrote a grant to bring high school teachers and their students to learn how to look for pulsars using special database located on the internet.

All this current year, I taught students to search for pulsars using the database on line. Pulsars are neutron stars. They form from stars larger than our sun that go supernova, but don't have enough material to collapse on themselves and form a black hole. As these stars spin they send off radio waves that can be detected by radio telescopes. These were first detected by astronomer Jocelyn Bell, then a graduate student in 1967 or 1968. The signals were so regular that at first they were nicknamed LGM, for "Little Green Men", thinking they might be some extra terrestrial life sending out radio signals.

For those of you who have seen M1, you are looking at a gas cloud or nebula powered by a pulsar embedded inside of the nebula. It is believed that in 1054 A.D. a supernova went off in this region of the sky and formed this pulsar.

Pulsars can not only be identified in radio waves, but all across the electromagnetic wavelength. For example, the newly launched Fermi Telescope has discovered over a dozen pulsars giving off gamma rays.

The kids in my astronomy class had fun searching the data base for pulsars. They did not find any, but learned a lot and all of the students contributed to a poster paper that they presented to scientists and other high schools in the collaborator at a session at West Virginia University on May 29th in Morgantown. Not only did they get a chance to show off their work, but they had

fun touring the plasma physics lab, saw nanotechnology labs, played with liquid nitrogen and toured the West Virginia University observatory with a 14 inch telescope. Next year I hope to continue the pulsar search with students from my high school astronomy class.

Here are some helpful links to learn more about pulsars and our pulsar search research:

Learn about Pulsars in General:

http://imagine.gsfc.nasa.gov/docs/science/known_12/pulsars.html

Go find out about our pulsar research:

<http://www.pulsarsearchcollaboratory.com/>

Try your hand at looking at some data. We have a place where you can log in as a guest to see what our data looks like:

<http://psrsearch.wvu.edu/psc/index.php>



That is 2008-2009 students Kayla Schoppert and Shay Nagley stretched out on the planetarium floor using computers from the portable laptop lab in the planetarium, searching through the database, hunting for pulsars.



Students Cory LeMaster, Nathan Martin and April Liska get a chance to present their paper to Elkins High School students Olivia Rycroft and Grace Templeman.

PROGRAM for SAS Meeting July 8 LFCC 7:00 Room 125

I plan to present my optical collimator and briefly explain what it does and how it does it, that is, how it works. This is an intriguing instrument, I think, so I thought it would be interesting for show and tell.

Then I will show an episode from the UNIVERSE series that presents the outer planets. It begins with Pluto and the outer fringe of the Solar System discoveries and ends with a interesting discussion of the characteristics of Uranus and Neptune. The debate about the classification of Pluto is discussed in detail at the beginning of the video.

(James Adkins)