

The Mason-Dixon Astronomer



St*r Points

Major League to Minor League

March 2015 – Curt Roelle

March Meeting:

- Wed., March 11th – 7:30 pm
Bear Branch Nature Center

Skip Bird

"The Heliophysics Science Mission Directorate Forum Team"

Pre-Meeting Dinner

- Wed., March 11th – 6pm.
- Harry's Main Street Grill
65 W Main Street
Westminster, MD 21157

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This month marks the anniversary of the discovery of the gas giant planet Uranus in 1781. It was discovered by William Herschel, a professional composer and organist in Bath, England. There are known observations and recordings of the planet made back almost 100 years prior to its discovery. But what makes the discovery truly unique is that Uranus was the first planet to be discovered by an identifiable person.

Of course the other six planets (including earth) had long been known. However, none of their discoveries could be credited to any one person in the same way Uranus was. Herschel was knighted for his discovery and enjoyed instant and long lasting fame.

Likewise, Pluto was the last major planet to be discovered by an identifiable person. Discovered by Clyde Tombaugh in 1930, Pluto became the ninth planet in our solar system. However, things have turned out differently for Pluto. In recent years it has been reclassified – downgraded if you will – to the category of dwarf planet.

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President's Message

March 2015 – Tony Falletta

Greetings My Fellow Astronomers,

March is here! It's time to say goodbye winter and hello spring. The Vernal Equinox for 2015 occurs on March 20th at 6:45pm DST. Daylight Savings Time occurs this year on March 8th helping to turn our thoughts to warmer and longer days, spring plantings and perhaps the Messier Marathon.

As we wind our way through March, here at BBNC we are finalizing the opening of the Blaine F. Roelke Observatory. The telescope, a beautiful C14, has been installed. We are also acquiring all the equipment needed to make the observatory as fully functional as possible so to enable all the membership to get the most out of their particular avenue of astronomy and even venture to other aspects of our hobby that they may have thought about trying but never pursued. There will various classes offered so stay tuned for that announcement. We are expecting to have a grand opening to the public sometime in April. Once all the "t's" are crossed and the "i's" are dotted, we will announce that date.

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March Meeting – Guest Speaker

Skip Bird

"The Heliophysics Science Mission Directorate Forum Team"

The Heliophysics Science Mission Directorate Forum team is excited to work with professional developers for K-12 educators and informal audiences to be part of the Heliophysics Educator Ambassadors for Informal Educators program.

The Heliophysics Educator Ambassador (HEA) for Informal Educators program will focus on in-depth, learning experiences around Earth, Space, and Physical Science topics for informal educators in museum or science center settings that work with K-12 teacher professional development. The HEA program will provide the opportunity and materials for participants to develop the capacities needed to use NASA science, data, and educational resources as an educational ambassador for NASA Heliophysics science concepts, using the same materials and resources gained in the workshop with K-12 educators and direct audiences.

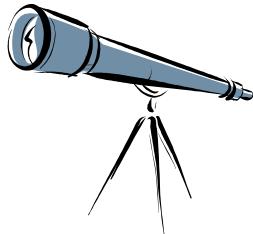
From Skip:

Come Join me at the next club meeting to find out what a Heliophysics Educator Ambassador is, where they work, how you can become one too, and when the world will end (just checking to see if your still reading). I will give a short (OK maybe a little longer than short, OK, OK, a lot longer than short) talk about the HEA program, some samples of activities, and how this program can help our club bring in and keep younger members.



Chicago weather during the conference....

Upcoming Events From Our Calendars



- ❖ **Monthly Meeting** March 11th, 7:30 p.m., at Bear Branch Nature Center (BBNC)
- ❖ **Soldiers Delight Public Stargazing** March 14th, 8 p.m., at Soldiers Delight Natural Environment Area in Owings Mills
- ❖ **Planetarium Show** March 28th, 7:30 p.m., at Bear Branch Nature Center (BBNC)

Join The Westminster Astronomical Society...

Joining WASI gives you a great opportunity to meet fellow astronomers and provides group memberships to the [Astronomical League](#) and the [International Dark-Sky Association](#). Additionally, benefits include access to our [Library](#) (over 500 astronomy-related books), the ability to borrow [club scopes](#), a subscription to the Astronomical League's *Reflector*, access to members-only observing sessions and sites, and club discounts on astronomical magazine subscriptions.

Adult Membership is still only \$25 per year.



NEW THIS YEAR – JUNIOR MEMBERSHIP

Yearly Membership For Anyone Under 18 Is Now Just \$5!
(YES...JUST FIVE DOLLARS!)

<http://www.westminsterastro.org>



St*r Points for March...

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It's noteworthy mentioning Pluto because later this year it will be visited by the New Horizons space probe following a journey from earth lasting more than nine years. Pluto will be the last of the nine original major planets to be visited by a spacecraft from earth. It's a double insult for the small distant world. Not only was it snubbed by all other space vehicles until now, but it's been stripped of its title as a major planet. It seems ironic that at launch Pluto was a planet, but upon New Horizons' arrival Pluto has been transformed into a dwarf even though it's the same size as before. But Pluto's a dwarf only in the eyes of the International Astronomical Union committee that drummed Pluto out of the club of planets. I think we all have our own differing opinions of this and other decisions made by committee and by government.

Speaking of the latter, March 8 is the day clocks "spring forward" for -- what must be the greatest false advertising campaign in government history -- "daylight savings" time. Guy Ottewell recalls a quote attributed to a Native American on the subject of daylight saving time: "*Only a government would think that you can cut a piece off the top end of a blanket, sew it onto the bottom end, and have a longer blanket.*" Personally, I think the only measurable difference it makes is that everyone gets taxed one hour of sleep on that day.

In the U.S. only the states of Hawaii and Arizona refuse to diddle with all their clocks twice a year and do not observe the time change. The only exception is Arizona's Navajo reservation. So it seems unlikely that the clear-eyed sagely person quoted above was Navajo.

For what it's worth, there are two major eclipses coming up in the following weeks before the next issue of Star Points hits the streets. First is a total solar eclipse on March 20. The path of totality, from the moon's umbral shadow, sweeps over some frigid bodies of water including the North Atlantic, Norwegian Sea, and the Barent's Sea. A few islands are located in the path as well. A partial eclipse will be seen in most of Europe, far western Asia, Iceland and Greenland, the countries surrounding the Mediterranean Sea and as far north as the pole. Unfortunately for us, we're on the night side of the earth and will miss it all.

Then on April 4, the entire Pacific Ocean is treated to a total lunar eclipse. But, unfortunately for us, we're on the daytime side of the earth and will miss all of it as well. The next total lunar eclipse visible from Maryland will be in September.

WOMEN IN SPACE (GIRL SCOUT DAY)

WOMEN IN SPACE (GIRL SCOUT DAY) AND PI DAY (3.141592653 OR 3-14-15, 9:26:53 AM.)

Join us for a family day that celebrates the accomplishments of women in aviation and space exploration. From the days of the earliest pilots to today's space program women have been making significant contributions. During this event, visitors will have the opportunity to meet female role models and learn about the women who inspired them. Also here is your chance to dust off all those PI-jokes, posters and T-shirts that you have been hiding from the rest of mankind.

Date: Saturday, 3/14/2015

Time: 10:00 AM - 3:00 PM

Location: NATIONAL AIR & SPACE MUSEUM STEVEN F. UDVAR-HAZY CENTER, AIR AND SPACE MUSEUM PKWY, CHANTILLY, VA

President's Message

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In Taneytown, we found out that the City and the County have not yet finalized their ownership transfer of all the park land that we are looking at to build the roll off roof observatory. This means we are currently in a holding pattern waiting on that process to conclude. After that we will need to meet with City officials to find out exactly what is being offered to WASI. Member Erich Bender has been and remains very instrumental in generating the needed back and forth discussion and hopefully in the near future we can have an official sit down meeting with the City Council so all cards can be put on table.

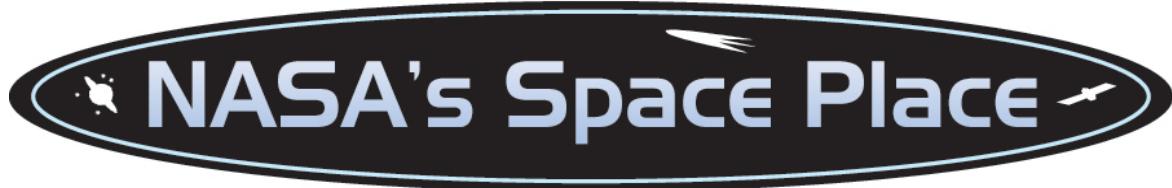
As of this writing, the WASI survey is open. For those of you that have completed the survey, thank you. If you haven't yet done so, please consider participating. The survey will close on Sunday, March 8th. My officers and I truly value your opinion and would like to get your thoughts and feedback about the observatory projects and possible future endeavors for WASI.

For March, my astronomy target is the Moon on Friday, March 13th. The Moon that day is 22 days old. At day 22, start at the top of the terminator and look at Mare Imbrium. There we find the Plato crater. Plato is a bright crater quite easily seen. The rim of the crater permits some awesome shadow casting on the floor of its smooth floor. Work your way slowly down the terminator until you approach the bottom of Mare Imbrium. There you will see the Lambert crater. This is a small yet distinctive crater relatively easy to locate due to its isolated position on the mare. Its interior is not smooth and has a small crater at its center. Right below Lambert under a low sun angle, you might be able to spot Lambert R, a buried ghost crater. It is a lava covered rim of a crater that is almost completely covered by the mare. The ghost crater is a little bigger than Lambert. Next, work down the terminator further until you come to the Fra Mauro formation. It was here that Apollo 14 landed the intended landing site of the aborted Apollo 13 mission. The Apollo 14 mission was the third manned lunar landing mission. Its objective was to perform detailed scientific lunar exploration. The crew of Apollo 14 was commanded by Alan B. Shepard, Jr., command module pilot Stuart A. Roosa, and lunar module pilot Edgar D. Mitchell. They launched from Kennedy Space Center, Fla., at 4:03:22 EST on January 31, 1971. Fra Mauro is a crater about the size of Copernicus and is filled with ejecta thought to be from the formation of the Imbrium Basin. Apollo 14's mission was to collect some samples of the ejecta for scientists to study and determine the age of this Basin. It was decided that its age is approximately 3.8 billion years old. Of note, you may recall that Apollo 14 commander Alan Shepard hit 2 golf balls on the Moon on his 2nd EVA. Cool! To complete our tour down the terminator, work your way further down until you spot Clavius crater, a shallow basin filled with a batch of small craters. The last stop on the terminator is the Tycho crater. Tycho is a standout on the Moon for me because at full Moon, its rays extend a long way along the lunar surface. When Tycho is on the terminator, it is virtually lost among the other craters in its region. When the shadows are cast on the walls of Tycho, you will get a spectacular view of its central peak also casting shadows.

Thanks for reading and I hope to see you all at our next meeting.

Clear Skies,

Tony Falletta



The Heavyweight Champion of the Cosmos

By Dr. Ethan Siegel

As crazy as it once seemed, we once assumed that the Earth was the largest thing in all the universe. 2,500 years ago, the Greek philosopher Anaxagoras was ridiculed for suggesting that the Sun might be even larger than the Peloponnesus peninsula, about 16% of modern-day Greece. Today, we know that planets are dwarfed by stars, which themselves are bound together by the billions or even trillions into galaxies.

But gravitationally bound structures extend far beyond galaxies, which themselves can bind together into massive clusters across the cosmos. While dark energy may be driving most galaxy clusters apart from one another, preventing our local group from falling into the Virgo Cluster, for example, on occasion, huge galaxy clusters can merge, forming the largest gravitationally bound structures in the universe.

Take the "El Gordo" galaxy cluster, catalogued as ACT-CL J0102-4915. It's the largest known galaxy cluster in the distant universe. A galaxy like the Milky Way might contain a few hundred billion stars and up to just over a trillion (10^{12}) solar masses worth of matter, the El Gordo cluster has an estimated mass of 3×10^{15} solar masses, or 3,000 times as much as our own galaxy! The way we've figured this out is fascinating. By seeing how the shapes of background galaxies are distorted into more elliptical-than-average shapes along a particular set of axes, we can reconstruct how much mass is present in the cluster: a phenomenon known as weak gravitational lensing.

That reconstruction is shown in blue, but doesn't match up with where the X-rays are, which are shown in pink! This is because, when galaxy clusters collide, the neutral gas inside heats up to emit X-rays, but the individual galaxies (mostly) and dark matter (completely) pass through one another, resulting in a displacement of the cluster's mass from its center. This has been observed before in objects like the Bullet Cluster, but El Gordo is much younger and farther away. At 10 billion light-years distant, the light reaching us now was emitted more than 7 billion years ago, when the universe was less than half its present age.

It's a good thing, too, because about 6 billion years ago, the universe began accelerating, meaning that El Gordo just might be the largest cosmic heavyweight of all. There's still more universe left to explore, but for right now, this is the heavyweight champion of the distant universe!

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Learn more about "El Gordo" here: <http://www.nasa.gov/press/2014/april/nasa-hubble-team-finds-monster-el-gordo-galaxy-cluster-bigger-than-thought/>

El Gordo is certainly huge, but what about really tiny galaxies? Kids can learn about satellite galaxies at NASA's Space Place <http://spaceplace.nasa.gov/satellite-galaxies/>.

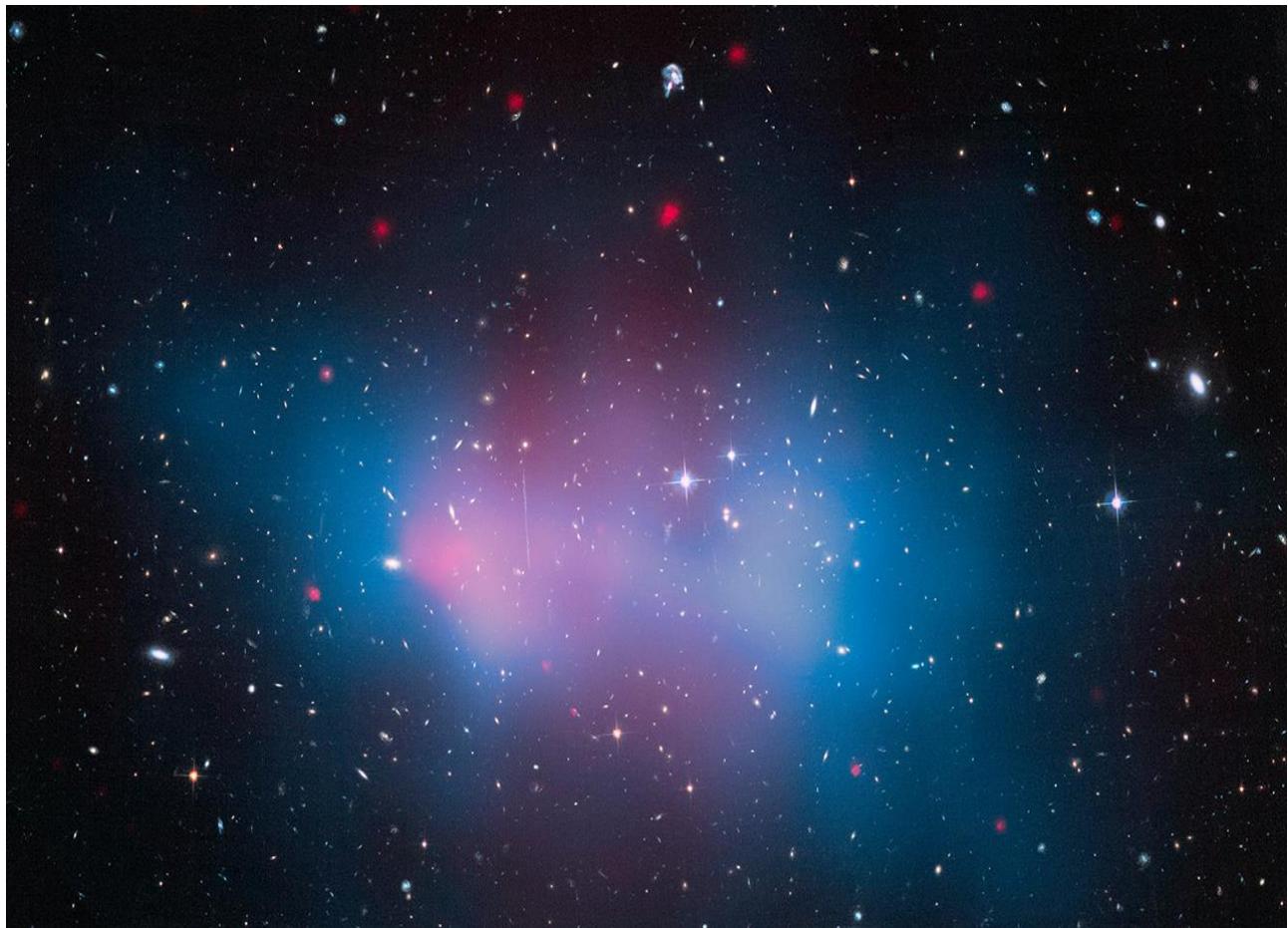


Image credit: NASA, ESA, J. Jee (UC Davis), J. Hughes (Rutgers U.), F. Menanteau (Rutgers U. and UIUC), C. Sifon (Leiden Observatory), R. Mandelbaum (Carnegie Mellon U.), L. Barrientos (Universidad Catolica de Chile), and K. Ng (UC Davis). X-rays are shown in pink from Chandra; the overall matter density is shown in blue, from lensing derived from the Hubble space telescope. 10 billion light-years distant, El Gordo is the most massive galaxy cluster ever found.