



Mingo Creek Park Observatory

# The Guide Star

Newsletter of the Amateur Astronomers Association of Pittsburgh, Inc.

Founded June 9, 1929 by Chester B. Roe and Leo J. Scanlon

Website: [3ap.org](http://3ap.org)



Nicholas E. Wagman Observatory

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## INSIDE THIS ISSUE...

Vice President Commentary	1
Upcoming Speakers	1
WQED Celestron Award Ceremony	1, 2
Have You Bluffed About the Cosmos Today?	2
Book Review	3
Another Asterism Discovery	3
Galiescope	3
Photos from Wagman 06/27 Star Party	4
Gate Lock Procedure-Wagman	5
Private Picnic Star Party	5
Passavant Star Party	5
Welcome New Members	5
Scout Group Star Party-Wagman	5
New Dome at Mingo Photos	6
Citizen Sky-A Different Type of Citizen Science	7
Twinkle, Twinkle Neutron Star	7, 8
I Know Why the Black Hole Sings	8
Important Dates and Mingo Picnic	9

## VICE PRESIDENT COMMENTARY

By Craig Lang

Recently, I was interviewed for an AAAP article in the Pittsburgh Post-Gazette. During the interview I was asked how I became interested in astronomy. For me, this was an easy question to answer. Or so I thought then. I answered the reporter's question and we went on with the interview.

Turning the question to everyone in the group... How did you become interested in astronomy? It really is an interesting question, and I am sure that with the diversity we have in our members, the responses would be very interesting. We all get to

hear from each other on our observing sessions, star parties, and outreach events, but would it not be great to hear some back story? Send me your story and we can get this in a future Guide Star.

At least two organization officers have already talked with me about our current membership levels. It is definitely a good idea for us to review our current levels and consider additional levels to make membership more attractive to those in situations that might be rather expensive in their situations. So this issue is very likely to be brought before our executive committee soon.

## UPCOMING SPEAKERS

By Craig Lang

I am very excited to announce the first two scheduled speakers of our 2009 – 2010 season. Karen O'Neil, Assistant Director at NRAO Green Bank, WV will be with us at the September 11th meeting.

Dr. Michael Wood-Vasey, Assistant Professor, Department of Physics & Astronomy at the University of Pittsburgh, will be with us at the October 2nd meeting. What a great way to start! More information on their respective presentation topics will be included in the next issues of the Guide Star.

## WQED CELESTRON AWARD CEREMONY AT WILLIAM PENN ELEMENTARY SCHOOL THURSDAY, JUNE 4, 2009

By Kathy DeSantis

Lisa Jones, second grade teacher at William Penn Elementary School, in a field of eighty entrants, wins an 8-inch Celestron GPS XLT, as part of WQED's 400 Years of Astronomy promotion. Members of the Amateur Astronomers Association of Pittsburgh assisted in the award ceremony.

AAAP members Kathy DeSantis and Clark Ritchie joined Maria Pisano, WQED Assistant Marketing Representative, at the presentation on Thursday, June 4. Clark generously assembled the telescope and shared his Celestron power supply. Kathy shared her collection of giant-sized astronomy books and posters to set the stage in the multipurpose room. Clark and Kathy answered questions after the showing of 400 Years of Astronomy. Packets of information on AAAP Star Parties and six months of Distant Worlds Star maps were sent home with each student in the school.

WQED Pittsburgh presented William Penn Elementary School with a CPC® GPS XLT Celestron telescope at a school assembly Thursday, June 4 at 3:00 p.m. as part of its IYA2009 activities.

The telescope donated by Celestron, valued at \$2,000, was offered to school districts in WQED's viewing area as part of a national public broadcasting initiative in which WQED participated promoting the premiere of "400 Years of the Telescope: A Journey of Science, Technology and Thoughts", the official television program of IYA2009. Eighty entries were accepted March 26 through April 6 online at [www.wqed.org](http://www.wqed.org). Kim Jones of Westmoreland County and a second-grade teacher at William Penn were announced as the winners LIVE on WQED's nightly newsmagazine program, "OnQ". Kim's principal, Brad Simala, said students are excited to have such a great telescope to use for their science studies at the school.

The astronomy community appreciates WQED Pittsburgh's continuing support of astronomy and lifelong science education. WQED Pittsburgh, honored with the 2007 and 2006 Mid-Atlantic Emmy® Award for Station Excellence, was founded in 1954 as the nation's first community-supported broadcaster. WQED creates, produces and distributes quality programs, products and services to engage, inform, educate and entertain the public within its community and around the world. ([www.wqed.org](http://www.wqed.org)).

Pittsburgh was one of eight markets throughout the United States where public broadcasting (WQED) and amateur astronomy club (AAAP) cooperated with the Astronomical Society of the Pacific and International Year of Astronomy.



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[http://www2.snapfish.com/slideshow/AlbumID=1006894008/PictureID=35460089008/a=45555616\\_45555616](http://www2.snapfish.com/slideshow/AlbumID=1006894008/PictureID=35460089008/a=45555616_45555616)

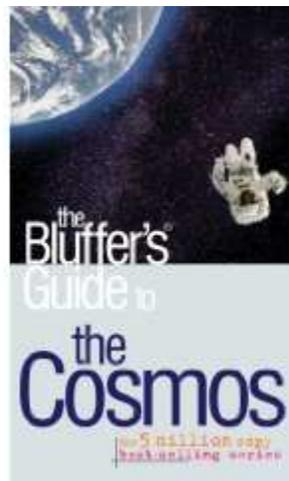
## HAVE YOU BLUFFED ABOUT THE COSMOS TODAY?

By Daniel Hudon

Massachusetts author pens guide to the universe for the uninitiated

Somerville, MA (6/21/09) –

Need a quick cosmic refresher to help you celebrate International Year of Astronomy events? Get the latest title in the five-million copies sold, bestselling Bluffer's Guides series, *The Bluffer's Guide to the Cosmos*®, by Daniel Hudon. Written with comically cosmic humor, this ninety-six page guide will arm you with enough astro-ammunition to rocket you into bluffing stardom.



From the big bang to dark energy, from life on Mars to why Pluto got kicked out of the planetary club, it's all here—and written in a light, witty style that will keep you zooming through the pages. How far away is space? How long would it take you to travel across the Milky Way galaxy if you traveled at the speed of light without stopping for fuel, coffee or bathroom breaks? Which kinds of stars would singe your hair if you stood too close? What color is the universe, really? With this book, you'll have all you need to know to appear more in touch than you really are.

Hudon, a natural sciences lecturer at Boston University, recognizes the need to write about the grand facts and ideas of the universe in a way that doesn't intimidate readers. Instead, he lets them in on the game by alerting them to jargon and inside jokes. "*The Bluffer's Guide* takes a lighthearted look at the subject, yet there is a good deal of useful information," writes The Sunday Independent.

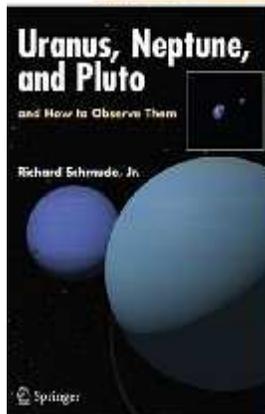
*The Bluffer's Guide to the Cosmos*, ISBN: 978-1-903096-42-0, published by Oval Books (London, UK) is available through special order at local bookstores and through Amazon.

Humorous video clips about the book can be found on YouTube at:

<http://www.youtube.com/watch?v=p1i61bsNqo> and  
[http://www.youtube.com/watch?v=KqIuN\\_QD4KU](http://www.youtube.com/watch?v=KqIuN_QD4KU)

## BOOK REVIEW

By Jack Ciciarelli



I stumbled across what I think is a pretty good and useful book. It's rather technical, probably aimed at the more "high end" amateurs. The title is *Uranus, Neptune, and Pluto and How to Observe Them*. The author is Schmude, Richard W. published by Springer, 2008 ISBN: 0387766014.

I found it in the Penn State library system at the PSU Beaver Campus. Some of you may know of this already, or even have a copy, but for those who don't and are interested in this topic it is worth a look.

By John Cheng

Schmude's "*Uranus, Neptune, and Pluto and How to Observe Them*" is an entry in Springer's Astronomers' Observing Guides series.

There may be about twenty titles in the series, all written by observers with expertise in their areas. I have a few and you're right, they are aimed at observers who are beyond beginner but I do think an enthusiastic reader could tackle the one's I've seen. It probably would depend on their interest.

Some other interesting titles:

*Nebulae and How to Observe Them* by Steven R. Coe, a well-known deep sky observer located in the southwest.

*Meteors and How to Observe Them* by Robert Lunsford, who works with the International Meteor Organization.

*The Herschel Objects and How to Observe Them* by James Mullaney, former member of the AAAP.

*Double & Multiple Stars, and How to Observe Them* by James Mullaney, former member of the AAAP. This is the best introductory book I know. Others I've seen are more technical.

*Galaxies and How to Observe Them* by Wolfgang Steinicke and Richard Jakiel. Steinicke was involved in a revision of the NGC and IC catalogs.

*The Moon and How to Observe It* by Peter Grego, fellow of Britain's Royal Astronomical Society and columnist for Astronomy Now magazine. I think this is the best single book on our Moon for an amateur observer.

And soon to come:

*Variable Stars and How to Observe Them* by Arne E. Henden, who is the current director of the American Association of Variable Star Observers (AAVSO). I'll be interested in this one as two good books are available, David Levy's and Gerry Good's.

## ANOTHER ASTERISM DISCOVERY

By Tom Reiland

Here's the information concerning the asterism I spotted on July 13, 2009 with the Manka scope at 11 PM. It is my tenth. I have it at: RA 12 32 09, Dec +13 37 09. It could either be a triangle or an elongated letter "T" at about 7.25 minutes in width (RA) and either 5 or 9 minutes (if it is seen as a T) in Dec (height). The star to the SE is about 10.2 mag, the NE star is close to 10.5 and the western star is about 11.0 mag. The star to the north that would make it a "T" or an odd-looking triangle is slightly brighter than 12.0 mag.

## GALILEOSCOPE

By William Oberman

First impression of the Galileo Telescope: The packaging is very professional & commercial. The raw materials of the scope impressed me. I mean, it's plastic but it's very sturdy plastic. And, the lenses seem quite nice. The instructions are...well, terrible quite frankly. I gave them a try, and when things weren't working out, I went to the site and downloaded this:

<http://unawe.org/joomla/images/materials/instruments/galileoscope.pdf>

I found out that I messed up several times already. That PDF is amazing though, no words but 100% understandable. Things I messed up:

- The focuser "tongue and groove" is very subtle (I had it backwards without even realizing it).
- The scope body has notches for the large O-rings, and the focuser has notches for the small O-rings (I had the large on the focuser, and wasn't sure where the small should go).
- I totally missed and left out the field stop (a very little ring), and found it in the discarded packaging (for the non-Galilean, 25X, eyepiece).
- The official instructions don't tell you how to configure the two lenses for the "Galilean" 18X eyepiece.

While I didn't mess it up, as an FYI, the eyepiece lenses are kind of hidden...the objective is easy to find, but what seems like back padding of it can be separated and contains the tiny set for the eyepieces.

I went in the backyard to try out the various "official" eyepiece combinations. I have a new appreciation for Galileo! If nothing else, this scope is a great hands-on education on why Galileo was amazing, and quite frankly why his detractors weren't totally crazy...the Galilean eyepiece is like looking through a very, very small straw. I mean, the field of view is hard to describe small. To do things like build a map of the Moon would take patience. The modern design 25x (and 50x Barlow) eyepieces felt quite roomy in comparison. Now I just have to wait for a clear night to see how it really performs.

PS: I was order 1196.

PHOTOS FROM WAGMAN JUNE 27, 2009 STAR PARTY

By Dave Smith



## GATE LOCK PROCEDURE FOR WAGMAN

By Tom Reiland

Here's a reminder about the gate lock procedures at Wagman Observatory: Do not put the lock in your car after you open the gate. This is known as the Tom Reiland/Wade Barbin/Terry Trees rule because we all made the mistake of throwing the lock in our cars and driving home with it, leaving nothing for the members left on the hill to lock the gate. I've had to remind three members about this in the past few weeks.

We had a nice turnout at the observatory on Monday, July 13. Terry Trees, Wallace Watson, Mike Nizinski, Bill and Maureen Moutz, Andy Smith, Jim Johnston and I had a pleasant, though not spectacular, evening of observing. Jim and Wallace were still there when I left at 1:20 AM. I located three more Herschel objects and another possible asterism in Coma Berenices.

Wallace, Jim, Andy and I observed Jupiter Mu Capricorni and Neptune in either binoculars, telescopes or both. Very nice. With my two hours of observing, I reached the 100-hour mark for 2009. It's the earliest point in the year that I've hit 100 since 1978 and 1977 when I was half my current age.

## PRIVATE PICNIC STAR PARTY JULY 12

By Bill Moutz

A friend of ours invited us to a cookout at his home in a rural area three miles west of Zelienople. We took our Dob to share the night sky. Including Maureen and I, there were eight people total. The sky was darker than Wagman and although Mike had an acre of lawn it was surrounded by trees. Therefore, I found another plus for Dobsonian style telescopes. To see various objects between the trees I had to move the Dob several times. If I had set up my GOTO, it would have been a hassle realigning it with Polaris after every move. We showed them Saturn, Jupiter, Alberio, Andromeda galaxy, Double Double, Vega, Mizar and Alcor, the Coat Hanger with binoculars and the diamond ring asterism around Polaris. When the Moon came up I showed it with my 9 mm and 40 mm eyepieces. My friend, Mike, made a statement, "I will never look at the Moon the same way again". We left around 1:00 a.m.

## PASSAVANT RETIREMENT COMMUNITY STAR PARTY JULY 17, 2009

By Bill Moutz

Because of inclement weather, we held an indoor star party for the residents. We held the star party for approximately 25 residents of the retirement community and 2 staff members. Upon arrival we were directed to the second-floor auditorium. Prior to the presentation we and the residents were treated to hot dogs and chips. George Guzik gave another outstanding presentation on beginning astronomy after which we had a few questions asked. We had set up my GOTO and binoculars with parallelogram

mount and Bob Novak's Dob. I explained how telescopes work and the pluses and minuses of reflectors and refractors. After a ten-minute break we showed NASA's DVD, Cosmic Collisions. The residents loved our program and want us to come back for an outdoor star party in the fall. Maureen handed out fliers and we invited them to come for a star party at Wagman. Amateur astronomers in attendance were George Guzik, Bill and Maureen Moutz, Bob Novak and his fiancé, Susan, and Mary DeVaughn.

## WELCOME NEW MEMBERS

P. Garfield Cooper  
Mike Ruscitto

Photo by Mary DeVaughn  
Taken with a Samsung Camera Phone



## SCOUT GROUP STAR PARTY AT WAGMAN

By Tom Reiland

This is a reminder that we have 90 to 100 scouts and parents coming to Wagman Observatory on Thursday, August 6. You should be there by or before 8 PM if you plan to assist us with this event. They are very excited about their private star party. Let's give them a good show, weather permitting. It should be clear because it's the night after Full Moon.



Boy Scout Astronomy Merit Badge

### NEW DOME INSTALLATION AT MINGO

Photos by Dave Smith



## CITIZEN SKY: A DIFFERENT TYPE OF CITIZEN SCIENCE

By Aaron Price, [Slacker Astronomy](#)

<http://www.slackerastronomy.org/wordpress/>



Hi, all. Been a long time! I'm starting my fourth year in grad school and beginning dissertation work. The end is within sight, after which I hope to return to some level of activity. I'm using what few brain cells are left to think up some new, crazy stuff. But until that day eventually comes, I wanted to let you know about this other, crazy new project I've begun at my work: [Citizen Sky](#) (<http://www.citizensky.org/>).

This is not your average citizen science project. We are not asking simply for data. We also want to help YOU analyze the data and to help YOU publish YOUR results in professional journals! The idea is that citizen scientists get to experience the entire scientific process, not just one stage.

To help, we are developing tutorials, java-based analysis software with slick GUIs, building online collaborative tools, etc. We are also holding [two public workshops](#) (<http://www.citizensky.org/content/workshops>).

The first is this August at the Adler Planetarium in Chicago. That one is focused on data collection and E/PO. The second will be at the California Academies of Science in San Francisco in spring, 2010. That one will be focused on analysis and paper writing. Travel grants are available for each.

Our scientific target is epsilon Aurigae, a VERY bright star that undergoes an eclipse about every 27 years. No one understands the eclipse and there are some neat theories, include one that involves swallowing planets. The system is too bright for the vast majority of professional (and even amateur) telescopes, so we are recruiting the public to monitor the 1-2 year eclipse. Hence the *citizen*, in *citizen science*.

This is a big project. We needed the National Science Foundation to fund a grant proposal so we could do it all. The proposal itself took months for me to write, with help from a small army of collaborators. Now the NSF is going to fund us to run this project for 3 years and then, hopefully, expand into other citizen science projects. But the core is

this: we want your help as real scientists, more than just data collectors (although you can stick with that if you want).

If interested, [register for an account at Citizen Sky](#) (<http://www.citizensky.org>). Lots of new announcements will be posted there soon, including the opening of public forums similar to the old ones we had here once upon a time.

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## TWINKLE, TWINKLE, NEUTRON STAR

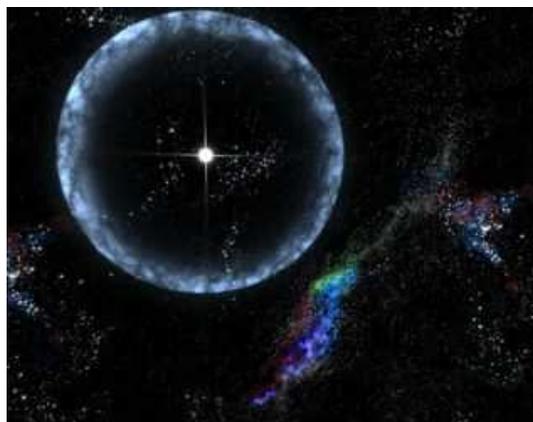
By Jennifer Ouellette, [Twisted Physics](#)

[http://blogs.discovery.com/twisted\\_physics/](http://blogs.discovery.com/twisted_physics/)

Neutron stars are mysterious beasts. Sure, astrophysicists know they're the result of a massive star compressing during a supernova and collapsing in on itself. And they know it retains most of its angular momentum in the process, and has an incredibly high surface gravity. But they don't know what exactly the surface of a neutron star is made of, although it's clear that iron plays a role -- our instruments have detected the telltale spectral signature of iron in emissions from these objects. Nor is it clear whether the iron is in gaseous form, thereby forming a sort of "atmosphere," or whether it forms an ultra-hard solid crust.

A couple of weeks ago, a paper appeared on the arXiv (<http://arxiv.org/abs/0905.4837>) with an intriguing means of telling the difference. Two Spanish scientists at the Universidad Complutense in Madrid conclude that if the iron in a neutron star is solid, it will form a rare and unusual crystal that is perfectly smooth and would envelop the entire star. And they've devised a method to test this by studying the surface of neutron stars using x-ray crystallography.

The idea is to look for binary neutron star systems: one "dead," with an iron crust, the other an x-ray pulsar. X-ray emissions from the pulsar should hit the surface of its partner, and those rays should be diffracted and thus detectable by our terrestrial instruments. Assuming they can find these sorts of couplings -- roughly 5% of neutron stars belong to binary star systems -- scientists could learn a great deal more about the structure and behavior of neutron stars.



There could be yet another means of studying the structure of neutron stars: observing the frequency spectra of stellar oscillations, more commonly known as "starquakes." There is actually a subfield known as asteroseismology, although it specializes in ordinary stars. Neutron stars also have these sorts of seismic events, in which the stiff surface crust ruptures much like terrestrial (tectonic) earthquakes. It happens because as a neutron star ages, its rotation gradually slows down, and its shape becomes more spherical through a series of stellar quakes.

Stellar quakes also cause neutron stars to flare brightly temporarily with so-called x-ray oscillations. Astrophysicists think this is because after the quake, the equatorial radius is slightly smaller; neutron stars spin and thus have angular momentum, which must be conserved. So the extra energy is released as x-rays.

That's bad news for x-ray satellites, since they are momentarily blinded by the light. But it's good news for the x-ray photons themselves, which finally have sufficient energy to overcome the star's immense surface gravity (about  $10^{11}$  times that of Earth) and escape. Sometimes photons need their freedom, too -- it's a big, big universe out there.

Photo on previous page: An artist's concept of the 2004 occurrence in which a neutron star underwent a "star quake", causing it to flare brightly, temporarily blinding all x-ray satellites in orbit. Source: NASA. Public domain.

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<http://aavsowritersbureau.blogspot.com>

## I KNOW WHY THE BLACK HOLE SINGS

By Jennifer Ouellette, [Twisted Physics](http://blogs.discovery.com/twisted_physics/)  
[http://blogs.discovery.com/twisted\\_physics/](http://blogs.discovery.com/twisted_physics/)

Black Hole Week is still going strong here at Twisted Physics. There's no end to surprising facts about these enigmatic objects. One of my favorite black hole discoveries of the last few years was the 2003 [detection of a "singing black hole"](http://www.nasa.gov/centers/goddard/universe/black_hole_sound.html) :

[http://www.nasa.gov/centers/goddard/universe/black\\_hole\\_sound.html](http://www.nasa.gov/centers/goddard/universe/black_hole_sound.html) at the center of a galaxy in the Perseus Cluster, some 250 million light years from Earth. It's not actually trilling its way through a famous operatic aria like "Nessun Dorma" -- Luciano Pavarotti's reputation is secure -- and it only sings one note: B flat. But it is the lowest possible B flat ever detected.

The Cambridge University scientists used the middle C note on a piano keyboard as a reference point when determining where the droning note emitted by the black hole would fall on the musical scale. On a keyboard, the B Flat nearest middle C is 1-1/2 steps away.

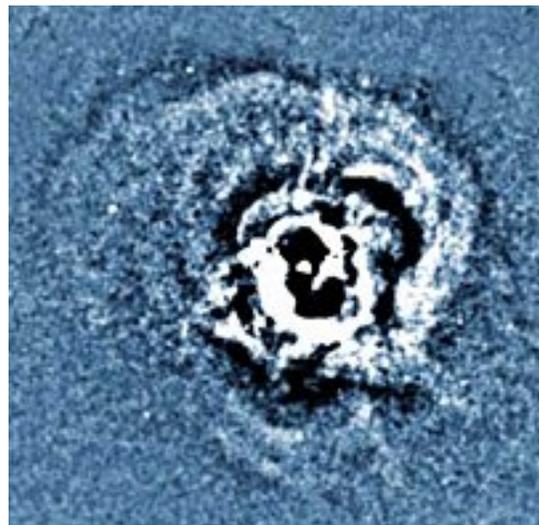
The black hole's B Flat, however, is a whopping 57 octaves below middle C -- one million, billion times lower than what the human ear can detect. That gives the sound waves a frequency of 10 million years, compared to 1/20th of a second.

They are the result of the sound waves, transmitted through the bits of dust and gas that make up the interstellar medium. Chandra saw lots of concentric ripples in the interstellar medium -- ripples the size of 30,000 light years. The actual ripples are caused by gravitational effects from all those galaxies clumped together in the Perseus Cluster. The black hole pulls matter in, but in the process jets of material shoot out around it, creating pressure waves. And to scientists, pressure waves are just sound waves. Anyway, it was this X-ray radiation that NASA's Chandra X-Ray Observatory detected in 2003, providing indirect evidence of a "singing" black hole.

Because they carry acoustical energy, those sound waves keep the gas dispersed throughout the cluster warmer than it would otherwise be. It's not just a bizarre acoustical curiosity, either: those warmer temperatures regulate the rate at which new stars form, so the sound waves could prove to be critical to our understanding of how the universe's structure evolves. Our musical black hole in the Perseus cluster might be a one-note wonder, but Pavarotti never promised to unlock the secrets of galaxy formation. We're just sayin'....

Image: Sound waves from a black hole in the Perseus Cluster. Source: NASA/Chandra.

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## MINGO PICNIC

By Ed Moss

We are having the club's southern picnic on August 15th starting at 3 PM at shelter no. 10 just below Mingo Creek Park Observatory. Members of the Spectroscopy Society of Pittsburgh will also be attending.

The club will be supplying the hot dogs and all that go with it; buns, relish, onions, etc. as well as paper plates, napkins and forks, etc. We are asking the members who plan to attend to bring items such as potato salad, macaroni salad, soft drinks, ice, potato chips, and other picnic items. We will work this in much the same way as the Christmas party, where everyone brings something or makes a donation to defray some of the club expenses.

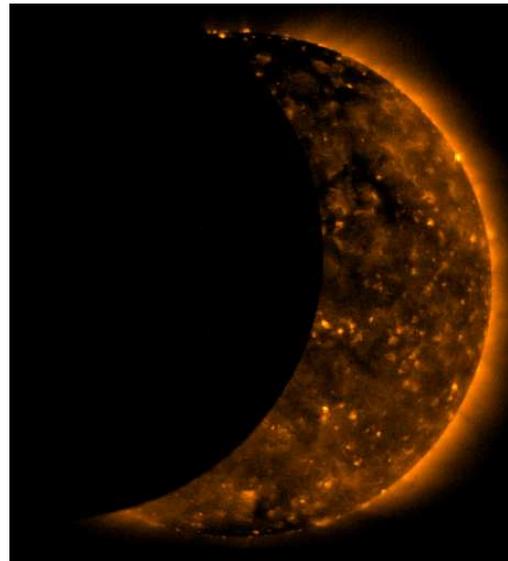
There will be observing afterward at our observatory on the hill above shelter 10. If you haven't yet been to Mingo Observatory, please come and see the club's newest addition. There are very nice views to the south of the night sky. Come have some fun, meet fellow club members and do some observing. Let's hope the astronomy gods grant us a good night for observing. Please email Ed at [president@3ap.org](mailto:president@3ap.org) and let him know what you are bringing.

## IMPORTANT DATES

**August 2**—Mercury 0.6° north of Regulus  
**August 3**—Moon at apogee  
**August 5**—Full Moon 8:55 p.m.  
**August 6**—Wagman Scout Star Party  
 Jupiter 3° south of Moon  
**August 9**—Uranus 6° south of Moon  
**August 11 & 12**—Perseids Meteor Shower  
**August 13**—Last quarter Moon 2:55 p.m.  
**August 14**—Raystown Star Party  
 Jupiter at opposition  
**August 15**—AAAP & SSP Mingo Picnic  
 Mars 3° south of Moon  
**August 17**—Neptune at opposition  
 Venus 1.7° south of Moon  
**August 18**—Mercury 3° south of Saturn  
**August 19**—Moon at perigee  
**August 20**—New Moon 6:02 a.m.  
**August 21**—Mingo Public Star Party  
 Moraine State Park Star Party  
**August 22**—Keystone State Park Star Party  
 Mingo Public Star Party  
 Saturn 7° north of Moon  
 Mercury 3° north of Moon  
**August 24**—Mercury at greatest elongation (27° east)  
**August 27**—First quarter Moon 7:42 a.m.  
 Antares 0.6° south of Moon  
**August 28**—Wagman Star Party  
**August 29**—Wagman Star Party  
**August 31**—Moon at apogee

**September 2**—Jupiter 3° south of Moon  
**September 3**—Neptune 3° south of Moon  
**September 4**—Full Corn Moon 12:03 p.m.  
**September 5**—Uranus 6° south of Moon  
**September 6**—Mercury appears stationary  
**September 11**—AAAP Business Meeting at Carnegie Science Center  
 Last quarter Moon 10:16 p.m.  
 Pluto appears stationary  
**September 12**—Wagman Public Star Party  
 Mingo Public Star Party  
 Murrysville Community Park Star Party (may be changed to the 19th)  
**September 13**—Mars 1.1° south of Moon  
**September 19**—Covered Bridge Festival  
**September 20**—Covered Bridge Festival  
**September 22**—Fall equinox 5:19 p.m.  
**September 24**—Antares 0.8° south of Moon  
**September 26**—Mingo Public Star Party  
 Wagman Public Star Party  
 First quarter Moon 12:50 a.m.  
**September 28**—Moon at apogee  
 Mercury appears stationary  
**September 29**—Jupiter 3° south of Moon  
**September 30**—Neptune 3° south of Moon

Solar Eclipse from NASA website Hinode satellite  
 July 22, 2009



**Amateur Astronomers Association of Pittsburgh, Inc.**

*Founded June 9, 1929 by*

*Chester B. Roe and Leo J. Scanlon*

**2009-2010 Executive Officers:**

- President: **Edward Moss**  
[president@3ap.org](mailto:president@3ap.org)
- Vice President: **Craig Lang**  
[vicepresident@3ap.org](mailto:vicepresident@3ap.org)
- Treasurer: **Michael Meteney**  
[treasurer@3ap.org](mailto:treasurer@3ap.org)
- Corresponding Sec: **John Mozer**  
[correspondingsecretary@3ap.org](mailto:correspondingsecretary@3ap.org)
- Recording Sec: **Dennis Derda**  
[recordingsecretary@3ap.org](mailto:recordingsecretary@3ap.org)
- Membership Sec: **Don Hoecker**  
[membershipsecretary@3ap.org](mailto:membershipsecretary@3ap.org)
- Guide Star Editors: **Bill & Maureen Moutz**  
[gseditor@3ap.org](mailto:gseditor@3ap.org)

**AAAP Member Dues\*:**

AAAP Dues:	\$24.00
Junior Member (under 18):	\$15.00

**\*Basic Procedure for Paying Dues:**

1. Make check payable to "AAAP Inc."
2. Send check to Michael Meteney, Treasurer,  
1070 Sugar Run Road; Venetia, PA 15367-1514

**Please submit any articles for the Guide Star to the Guide Star Editors at [gseditor@3ap.org](mailto:gseditor@3ap.org) by the 20th of each month.**

**\*\*Some websites may need to be copied and pasted in your browser to view them\*\***

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AMATEUR ASTRONOMERS ASSOCIATION  
OF PITTSBURGH, INC.  
1070 Sugar Run Road  
Venetia, PA 15367-1514