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

September 2010 **Volume 44, No. 9**

AAAP General Meetings Resume

Friday, September 17th 2010, 7:30 pm
Carnegie Science Center

September's Featured Speaker:

Dr. Duncan Lorimer,
Assistant Professor, West Virginia University.

Dr. Lorimer will be speaking to us on a topic he is passionate about:

Wild and wonderful pulsars!

He is an astronomer interested in compact objects (black holes, neutron stars and white dwarfs) which he studies using radio pulsars: rapidly spinning highly magnetized neutron stars.

Dr. Lorimer arrived at WVU in May 2006 from the Jodrell Bank Pulsar Group where he worked as a Royal Society Research Fellow. Before that he was at Arecibo Observatory (1998-2001) and at the Max Planck Institute for Radio Astronomy in Bonn (1995-1998).

His research revolves around surveys for radio pulsars and what they tell us about the population of neutron stars. This work is carried out with many collaborators and uses some of the classic radio telescopes around the world.

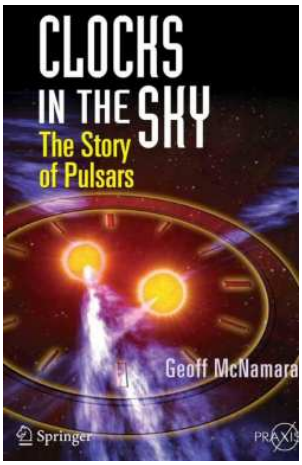
Of particular interest are young, energetic pulsars and binary systems where the orbiting companion is a white dwarf, a main sequence star, another neutron star, and (perhaps soon!) a stellar-mass black hole. His non astronomy interests are spending time with his family and catching some jazz in Morgantown.

A Pulsar Primer

"...ask the average person what comes to mind when thinking of astronomy...it's unlikely you'll hear the word pulsar…"
- Geoff McNamara

Although my interest in astronomy is probably a bit more than the average guy's, the above quotation easily applies to me too. I was aware that even though the term "pulsar" was unknown before the late sixties, pulsar research is now on the cutting edge of astronomy, that pulsars are rapidly spinning neutron stars and that their discovery by Jocelyn Bell and Antony Hewish in the UK was followed by a fracas over the Nobel prize.

But when this month's speaker and topic were announced, I found I had a lot more questions than answers so I picked up an introductory text - Geoff McNamara's Clocks in the Sky: the Story of Pulsars and got not only some answers but also a pretty good read.



First, the obvious question, can I see a pulsar? Answer, truly unlikely. Although there are as many as 1800 pulsars, only six emit in the visual range and the brightest of them is in Messier 1, the Crab, shining at the "blinding" magnitude of 16.5.

How large are they and what's with the rapid spinning? Some are as small as 10 kilometers in diameter. They can spin at more than seven hundred times a second and their speed is due to the conservation of the angular momentum they inherit from the large stars from which they evolved.

Author McNamara is an Australian science teacher whose unfamiliarity with pulsar research helped him to ask basic questions and form understandable answers. He shows that pulsar discovery and research depended on three factors: our models describing stellar evolution, nuclear physics and the rise of radio astronomy. He describes all three and relates the history and current state of pulsar science in a narrative, almost story-like way.

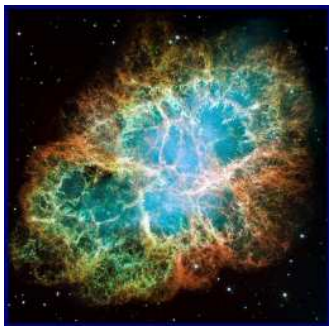
He ends by admitting that while few of us possess the physics or mathematics to fully appreciate all the implications of science done in the high energy and intense gravitational environments afforded by pulsars, the revelations they promise may be as exciting as anything that's appeared in an image or an eyepiece. ***- GS Editor***

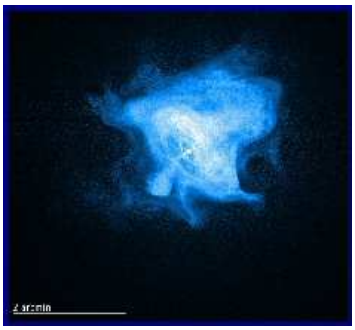
The Pulsar Powering the Crab

Most observers probably know the Crab nebula to be a ghostly white, slightly elongated cloud in Taurus, a relatively easy target and first on Messier's list - although it was actually discovered by English amateur, John Bevis, when Messier was only a toddler.

The supernova that generated the object was seen in Italy, Armenia, Iraq, Japan and North America but we date of the outburst as July 4th, 1054 thanks to Chinese astronomers who struck Carl Sagan as the only people in antiquity who seemed to stay up late.

Probably the most studied deep sky object of all ,and without doubt the finest supernova remnant in the sky, the Crab's continued luminescence after 900 years poses the question what lays at its heart, what powers the beast.





In late 2008 NASA released the Chandra image of the Crab on the right. (A Hubble image is on the left). In the words of the press release , the Chandra image:

"... gives the first clear view of the faint boundary of the Crab Nebula's X-ray-emitting pulsar wind nebula. The nebula is powered by a rapidly rotating, highly magnetized neutron star, or pulsar (white dot near the center). The combination of rapid rotating and strong magnetic field generates an intense electromagnetic field that creates jets of matter and anti-matter moving away from the north and south poles of the pulsar, and an intense wind flowing out in the equatorial direction…".

The Crab pulsar, which also emits in the visual, has a catalog name, CM Tauri. ***- GS Editor***

From the VP's Desk

First thing I would like to do in this month's column is to issue an apology of sorts to the AAAP's Eric Fischer. I was going back through my speaker notes and realized that I had a bio of him ready to read before his presentation back at the May meeting. I completely forgot the bio and delivered a hasty intro. So, I would like to rectify that, especially for the interest of new members, by giving the belated intro here.

"Eric Fischer has been an AAAP member since 1976. That year, he became Editor of "The Guide Star" and served in that position for two additional terms spanning the 1980's to the current decade. In 1986, Eric was named project manager for Phase I of the Wagman Observatory construction project, as well as Co-Director of the Observatory when it opened in 1987. In the early 1990's Eric served two terms as AAAP President and two more terms as Membership Secretary. He has given a variety of lectures to the AAAP and outside groups on subjects such as artificial satellite observing, sun halo phenomena and origins of astronomical terminology. Has been published in Sky & Telescope, Astronomy, and Ad-Astra magazines on the topic of satellite observing. Professionally, Eric is a Senior Technical Writer for Ansaldo STS, which is still known around these parts as "Union Switch & Signal" or "The Switch."

Our October meeting speaker will be Jeffrey Newman, an Assistant Professor of Physics and Astronomy at the University of Pittsburgh. His presentation is titled: "New Views of the Distant Universe". For the September speaker, see the details elsewhere in this newsletter.

Now get out there and start wondering....

- Craig

Mingo Harvest Moon Campfire

Wednesday, September 22, 2010
7 pm, Mingo Creek Park

Members of the AAAP are invited to join the Washington County Parks staff in offering the Mingo Harvest Moon Campfire, 7pm Wednesday, September 22, 2010, Shelter 2, Mingo Creek Park.

The fourth annual event around the campfire is a family-fun, relaxing evening of songs and stories while sitting under the Harvest Moon. Interesting facts about the Harvest Moon will be shared and fresh kettle corn will be made over the open fire. We encourage you to bring along a chair or blanket and a drink.

Those wishing to attend this event must register in advance with the Washington County Parks. Pre-registration required. 724-228-6867 Program registration not more than 30 days in advance. There is no fee.

AAAP members wishing to volunteer are to contact Kathy DeSantis kappa@3ap.org .

Note this event is not at the observatory but is at Shelter 2. See the link to the park map. http://nightsky.jpl.nasa.gov/event-view.cfm?Event_ID=20043

- Kathy De Santis

A Texas Star Party Visit

This was my third Texas Star Party. I had thought I would miss it due to a two-week trip to Hawaii. When that trip fell through, I instantly called Ed Moss, to ask if I still could hitch a ride with him to the Texas Star Party--the next best thing to Hawaii. ;)

Again, we had a wonderful time. There were 5 mostly clear nights. We would stay up all night, then sleep in till noon. Glen Sanner and Bob Kepple (formerly of Pittsburgh) were our observing buddies for the week, along with Bob Novak of the AAAP. I met new friends and reunited with those from previous years.

I always enjoy my stay in the woman's bunkhouse, where, for one week out of a year, I am completely normal by local standards, lol . . . One new friend, Shiobhan, was just learning astronomy and learning it FAST. She was a computer programmer and star-hopped with her borrowed dob using an astounding I-Pad star chart program that you just have to see to believe. She loaned me her 6-inch go-to telescope, and I had a fun with that.

TSP 2006: Observing Field by day

Each year the TSP offers beginner, regular, and advanced observing programs. Each year the programs focus on a different theme. This year I completed last year's "5 by 5" list of five galaxies, five nebula, five planetary nebula, five globular clusters, and five open clusters--and earned another observing pin for my hat. I failed to complete this year's list of 25 edge-on and face-on galaxies, but I helped Shiobhan complete her list!

My own personal objective was to view as many Caldwell objects as possible. Some of these objects may be visually impressive, while others are unusual or interesting from a astronomical point of view. (For instance, I saw a globular cluster that is being thrown out of our galaxy (it's already 275,000 light years away). One night, I was able to borrow Glen's 16-inch scope with digital setting circles. One women in the bunkhouse had visited nearby McDonald Observatory where she heard a rumor that there might be a supernovae in M101. So that night, I stood on a ladder and sketched this galaxy at the eyepiece, drawing the spiral arms and noting all the little specks of light.

Next morning, I compared my sketch to a map of the galaxy and, alas, all my little stars were accounted for, so no supernova was detected. (As it turns out, this would have been impossible; later we learned the supernova rumor was *only* a rumor.) Still, it was pretty cool to have made a sketch of a galaxy that, the next morning, exactly matched the picture. NERDY FUN!

But of course, I was only moderately nerdy by the standards of the star party, which draws the most advanced observers from around the country. One TSP friend eagerly described the various JETS (emitted from the centers of active galaxies) that he'd seen the night before. And of course, there were long lazy lunches and dinners in the rustic dining hall, where we lingered over our enchiladas and lemonade to debate urgent questions like "What if technology were to radically extend the human lifetime?" And "Will humans ever colonize other planets and solar systems?"

The Summer Milky Way rising over TSP 2009

The skies were great, the people were great, the lectures were great, the venders were great. (I now have earrings made from glass formed in the explosion of a meteor; a Matchbox replica of the Sojourner Mars Rover; a new book on Europa; and autographed copies of Bob and Glen's "Night Sky Observers Guide.") On the way home, Ed and I stopped at the Wright-Patterson Air Force Museum. I can't wait to do it all again. I hope I can convince some of you people to join us. Next year the Texas Star Party is May 29-June 5.

-Ann Norman

(Images : Public Internet Sources)

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
All times given are local. Details for AAAP Events can be found at: https://nightsky.jpl.nasa.gov/event-list.cfm?Club_ID=675&EventEra=Future			**1** 	**2**	**3**	**4**
5	**6**	**7**	**8** 	**9**	**10** * MCPO PUBLIC S.P. (Sunset)	**11** * NEWO & MCPO PUBLIC S.P. (Sunset)
12	**13**	**14**	**15** 	**16**	**17** * General Membership Meeting Carnegie Science Ctr. 19:30	**18** * Observe the Moon Night MCPO & Mammouth Park, West - moreland Co. (Sunset)
19	**20**	**21** * Jupiter comes to opposition and is at a 12 year diameter maximum	**22** * Mingo Harvest Moon Campfire MCPO (19:00)  Vernal Equinox 23:09	**23** 	**24**	**25** * NEWO PUBLIC S.P. (Sunset)
26	**27**	**28**	**29**	**30**		

Some Celestial Highlights This Month

September will see Mercury quite low in the morning sky all month beginning on the 6th. ***Venus and Mars*** will be paired low in west in the evening sky all month. ***Saturn*** disappears into the evening twilight. ***Jupiter*** and ***Uranus*** rise at mid-evening and are visible all night. ***Neptune*** rises early evening and is visible until early morning.

For those using programs to predict GRS transits, ***Jupiter's System II*** longitude is 151°. Note that as Jupiter comes to opposition, instances of its satellites and their shadows being in simultaneous transit increase.

Selenographic Colongitude is 147.51° at 0h UT at beginning of the month. Add 12.2° each day.
(All times below are local)

6 20:21 ***Jupiter*** Rises
23:03 ***Great Red Spot (GRS)*** transits Meridian
7 00:52 ***Io*** Shadow Transit Begins
01:15 ***Io*** Transit Begins
03:07 ***Io*** Shadow Transit Ends
03:28 ***Io*** Transit Ends
05:46 ***Ganymede*** Disappears into Eclipse
8 ***Saturn*** moves south of the Celestial Equator and will remain there for the next fifteen years
10 20:04 ***Jupiter*** Rises
21:09 ***Ganymede*** Transit Begins
22:59 ***Ganymede*** Shadow Transit Ends
23:56 ***Ganymede*** Transit Ends
11 02:19 ***GRS*** transits Meridian
06:07 ***Europa*** Shadow Transit Begins
06:40 ***Europa*** Transit Begins
19 ***Mercury*** at greatest western elongation (18°)
21 ***Jupiter*** and ***Uranus*** come to opposition.
Jupiter **at a 12 year maximum diameter of 49.8"**
22 ***Vernal Equinox*** at 23:09 local
23 ***Venus*** is brightest
24 19:13 ***Jupiter*** Rises
19:48 ***Io*** Transit Ends
19:54 ***Io*** Shadow Transit Ends
25 03:39 ***Ganymede*** Transit Begins
03:49 ***GRS*** transits Meridian
03:57 ***Ganymede*** Shadow Transit Begins
06:29 ***Ganymede*** Transit Ends
28 18:56 ***Jupiter*** Rises
20:53 ***Ganymede*** Reappears from Eclipse
21:09 ***GRS*** transits Meridian
29 00:13 ***Europa*** Transit Begins
00:36 ***Europa*** Shadow Transit Begins
02:55 ***Europa*** Transit Ends
03:21 ***Europa*** Shadow Transit Ends
03:43 ***Io*** Disappears into Occultation
06:09 ***Io*** Reappears from Eclipse

A Welcome to Our New Members

Ed Alcoff
Joyce Amatangelo
Shane Coffield
Michael Garing
Jim Garr
Haijing (Jane) Hao
Miles L. Hilsenrath
Chip Hogg
Matthew Jones
Carol Provan & Family

Upcoming in October

The next AAAP general meeting will be on Friday October 8th 2010 at the Carnegie Science Center at 7:30 pm.

The featured speaker will be Jeffrey Newman, Assistant Professor, University of Pittsburgh.

His topic will be "New Views of the Distant Universe".

Amateur Astronomers Association of Pittsburgh, Inc.

2009-2010 Executive Officers:

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Membership Sec:	**Don Hoecker** *membershipsecreary@3ap.org*
Guide Star Editor:	**John Cheng** *gseditor@3ap.org*

AAAP Member Dues:	**$24.00**
Student Membership (K-12 & full time college student):	**$16.00**
Family Membership	**$40.00**

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

September Event Reminders :

* *AAAP General Meetings Resume September 17, 7:30 pm, Carnegie Science Center*
* *Mingo Harvest Moon Campfire, September 22, 7:00 pm, Mingo Creek Park*

All Guide Star submissions are requested by the 20th day of the preceding month

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

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