



The Astronomical Society of the Toms River Area  
www.astra-nj.org

# ASTRAL PROJECTIONS

Volume 21 Issue 9

September 2010

\*\*\*\* PLEASE NOTE \*\*\*\*

Due to the renovation of the planetarium, meetings are in the Solar Lounge beginning at 7:00 PM. The Solar Lounge is located in the Ocean County College Center building #15 across from the Planetarium.

## Aperture Isn't Everything

Submitted by Bill Pellerin, Houston Astronomical Society GuideStar Editor.

### Meeting Schedule

#### September 10<sup>th</sup> Meeting

Richard Mack will give a presentation on Comets & Lunar Eclipse. In addition, preparation for the Science is FUNDamental collaborative program of the NJ Center for the Book and the Monmouth County Library System scheduled for Sunday, September 26, 2010. Snacks will be served for ASTRA members and telescopes will be setup outside for observing after sunset.

#### October 8<sup>th</sup> Meeting

"Astrophotography" given by Phil Zollner + Public Star Party. Snacks will be served for ASTRA members and telescopes will be setup outside for observing after sunset.

#### November 12<sup>th</sup> Meeting "Open General Meeting" + Public Star Party.

When amateur astronomers get together and talk about their telescopes, they usually discuss the aperture of the telescope first. Why? Because it is easy to determine, in fact, it is probably the parameter that is of most interest to knowledgeable telescope buyers.

The next most discussed parameter is focal ratio, which is stated as  $f/10$  or  $f/5$ , whatever it is. This number defines the focal ratio, the aperture = the focal length ( $f$ ) divided by the focal ratio. Or, the focal length = the aperture \* the focal ratio. The focal ratio is of great importance to those who image the sky.

For example, a  $f/10$  SCT (a common telescope in use by amateurs) of 8" diameter has a focal length of  $10 * 8 = 80$  inches. It is more common that the focal length is talked about in millimeters, so applying the correct conversion ( $1" = 25.4$  millimeters) we get the focal length = 2032 mm. It's peculiar that astronomers talk about diameter in inches and focal length in millimeters, but that is often the case.

The optical quality. The resolving ability of a telescope is determined by aperture, of course. More aperture equals more resolution, all things being equal. The problem, of course, is that all things are never equal, and the optical quality of telescope is what determines the quality of the image. Quality is a vague notion, but refers to the sharpness of the image, the absence of image artifacts, and the clarity of the image. It includes the optics' ability to focus all the light from a star to a single point.

Most advertisements, and web sites, for telescope makers tell you the resolution of the instrument, but this is based on the aperture only, and not on the average real-world performance of the telescope. Do you ever see something in telescope specifications about the optical quality? Not usually. There are often general statements about how the wonderful the optics are, but there is not much you can use to compare telescope A to telescope B. The term 'diffraction limited' is often associated with commercial telescopes. The manufacturer is telling you that the resolution of the telescope is limited by the aperture, not the quality of the optics.

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## ASTRA Library of Books & DVD's

The following books and DVD's are available to borrow for one month at a time. Request for these items must be made prior to our regular meeting and returned the following meeting. Please e-mail your request for these items to John Endreson [webmaster@astra-nj.org](mailto:webmaster@astra-nj.org) or call the ASTRA Hotline 609-971-8493

### BOOKS

- 1) **The Far Side of the Moon** by Charles J. Byrne.
- 2) **Night Watch** by Terence Dickinson
- 3) **New Atlas of the Moon** by Serge Brunier (Author), Thierry Legault (Photographer).
- 4) **Encyclopedia of space** by National Geographic
- 5) **The Real Mars** by Michael Hanion
- 6) **Don't Know Much about the Universe** by Kenneth C. Davis's

### DVD's

- 1) **Parts 1&2 Understanding the Universe What's New in Astronomy 2003** Taught by: Professor Alex Filippenko. Each part has 8 lectures, 45 minutes per lecture.
- 2) **Parts 1 to 5 Understanding the Universe An Introduction to Astronomy** Taught by: Professor Alex Filippenko each part has 8 lectures, 45 minutes per lecture.
- 3) **COSMOS**  
In his "ship of the imagination," Carl Sagan guides us to the farthest reaches of space and takes us back into the history of scientific inquiry in the course of 13 fascinating hours.

For a complete list of books and DVD's, visit our website or Call the ASTRA Hotline at 609-971-8493.

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## ASTRA Club Telescopes

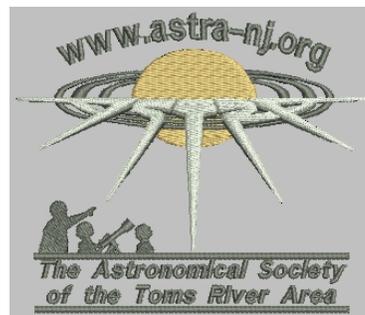
A.S.T.R.A. owns two Dobsonian type telescopes of 6 inches and 8 inches in aperture and two refractors one 80mm Celestron w/Altaz mount and one 120mm Orion AstroView w/equatorial mount. After suitable training, club members may borrow these telescopes for a month at a time. Contact John Endreson at:

[Webmaster@astra-nj.org](mailto:Webmaster@astra-nj.org) or call the ASTRA Hotline 609-971-8493 if you are interested in using one of our scopes.

### Wanted!

No longer used telescopes, parts, and accessories.  
Call the ASTRA Hotline at 609-971-8493  
We will come and pick-up your used equipment.

## ASTRA-WEAR: For Embroidered and/or Printed items With the ASTRA Logo



You can see some samples at ASTRA meetings. To order by mail:  
Shelter Cove Embroidery Co. 1333 Bay Ave Toms River, NJ  
08753 call 732-506-7700 or E-mail [astra-wear@estitches.com](mailto:astra-wear@estitches.com)

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## September 2010 Celestial Events

**1<sup>st</sup> Last-Quarter Moon** (1:22pm EDT).

**1<sup>st</sup> Dusk:** Venus, Spica, and Mars form a straight line in the west-southwest after sunset.

**4,5<sup>th</sup> Dusk:** Mars is just 2deg. upper right of Spica, which is now roughly 4deg. right of Venus.

**8<sup>th</sup> New Moon** (6:30am EDT).

**10<sup>th</sup> Dusk:** Mars is above the thin crescent Moon very low in the west-southwest a half hour after sunset. They form an elongated diamond shape with Spica just to their right and Venus to their left.

**11<sup>th</sup> Dusk:** Venus is 6deg. right of the Moon low in the west-southwest.

**13<sup>th</sup> Evening:** Antares is 3deg. left of the waxing crescent Moon.

**15<sup>th</sup> First-quarter Moon** (1:50am EDT)

**17,19<sup>th</sup> All Night:** Jupiter and Uranus are just 0.8deg. apart in the sky.

**22<sup>nd</sup> Evening:** Jupiter and Uranus are 6deg. below the Moon. Autumn Equinox begins at 11:09pm EDT.

**23<sup>rd</sup> Full Moon** (5:17am EDT)

**27<sup>th</sup> Evening:** The Pleiades rise around 9pm 2deg. left of the Moon.

**30<sup>th</sup> Last-quarter Moon**  
(11:52pm EDT)

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# Whats up this month?

## ASTRA Public Outreach & Star Parties Schedule for September

### Coyle Field Public Star Party

ASTRA Members meet to help newbie's learn the night sky and how to use their telescopes. Beware! Although ASTRA members observe at Coyle Field It is not an official ASTRA observing location, therefore you should observe at your own risk.

Date: Saturday, 9/4/2010

Time: 7:00 PM - 2:00 AM

Location: Coyle Field, Coyle Field Rt 72 Stevenson Road,  
Burlington County, NJ 08019

### Berkeley Pride Day

Daytime observing of the sun. Various displays, questions and answers. Entertainment and fireworks

Date: Saturday, 9/11/2010

Time: 9:00 AM - 10:00 PM

Location: Veterans Park, Tilton Blvd. off Veterans Blvd., Bayville,  
NJ 08721

### OCC Autumn Public Star Party & International Observe the Moon Night

Members of ASTRA will setup their telescopes on the campus of Ocean County College for The International Observe the Moon Night (InOMN) 2010 is the first annual public outreach event dedicated to engaging the lunar science and education community, amateur astronomers, space enthusiasts, and the general public. For more information go to <http://observethemoonnight.org>

Date: Saturday, 9/18/2010

Time: 7:00 PM - 11:00 PM

Location: College Center Solar Lounge "Ocean County College",  
use parking lot # 2 on College Dr., Toms River, NJ 08754

### Science is FUNdamental More information on page #4

Date: Sunday, 9/26/2010

Time: 1:00 PM - 5:00 PM

Location: Monmouth County Library Headquarters, 125 Symmes Drive, Manalapan, NJ 07726

**Call the ASTRA Hotline 609-971-8493 or check the message board on the date of the star party for up to date information on these events.**

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## Astronomical Items for Sale, or Help Wanted Advertisements:

If you have an item to Sell, or need help with an astronomical problem (a question, or Telescope setup) contact the President [President@astra-nj.org](mailto:President@astra-nj.org) or the ASTRA Hotline 609-971-8493 to announce it at a meeting and send the advertisement to the newsletter (See Newsletter below).

**Newsletter:** E-mail material (Meeting reports, Observing reports) to [Newsletter@astra-nj.org](mailto:Newsletter@astra-nj.org)

## EXECUTIVE BOARD

**President** – Bob Salvatore,  
[President@astra-nj.org](mailto:President@astra-nj.org);

**Vice President-Secretary** – John Endreson, [VP@astra-nj.org](mailto:VP@astra-nj.org);

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**Webmaster** - John Endreson,  
[Webmaster@astra-nj.org](mailto:Webmaster@astra-nj.org).

Check us out on Facebook, search groups for ( ASTRA Astronomy ) and look for our logo.



## Science is FUNdamental

Sunday September 26, 2010 1:00 PM - 5:00 PM Monmouth County Library Headquarters, 125 Symmes Drive, Manalapan, NJ 07726-3249  
Contact: 732-431-7220

<http://www.eventkeeper.com/code/events.cfm?curOrg=MONCO&curSKW=fundamental&setRef=new> The lower gallery will be transformed into a science fair! Exhibits on rocketry, astronomy, satellite communications, computers and robotics. Visit STARLAB, an indoor planetarium, and an exhibit from Liberty Science Center. Talk to a NASA space shuttle astronaut, keynote speaker Robert Cenker, who traveled over 2.1 million miles in 96 Earth orbits and logged over 146 hours in space. Cenker will speak at 1:30 pm, answer questions and sign autographs. Other speakers / presenters include: Mike Centrella (Momentum Technology Partners), discussing rocketry; Phil Burkholder, (Orbital), on the Hubble Telescope; Fred Carl (Camp Evans), on satellite communications; Mike Lemonick, senior science writer for Time Magazine, on the Big Bang theory; Monmouth County Prosecutor's Office, on the science of crime scene investigation.



ASTRA is recognized as having one of the best public outreach programs in the country as recognized by Astronomy magazines "Out of this World" public outreach program. For more information go to <http://nightsky.jpl.nasa.gov> or contact Ro Spedaliere ([Treasurer@astra-nj.org](mailto:Treasurer@astra-nj.org)) or the ASTRA Hotline 609-971-8493



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The *REFLECTOR* is published in March, June, September and December. If you do not receive your copy of the REFLECTOR magazine, contact Astronomical League Coordinator (Alcor) Ro Spedaliere ([Treasurer@astra-nj.org](mailto:Treasurer@astra-nj.org)) or the ASTRA Hotline 609-971-8493 and leave a message.

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In the end, as a practical matter, the quality of the view is a function of the optics. It should come as no surprise that high quality optics come at a premium price. While excellent optical systems can be made with any design, some designs make the realization of optimum optical quality difficult. Clearly, the number of optical elements in the design imposes the requirement on the optician to make each of the elements of first-rate quality. While this can be done it's not easy.

One example of a telescope with poor optical quality, familiar to most of us, is the early Hubble Space Telescope. Do you remember that when it was initially put in service that the images were poor because the primary mirror had been made to the wrong shape? The surface of the mirror was exceedingly smooth, but with the wrong shape the mirror did not focus all the incoming light to the same place. A subsequent fix to the telescope (by adding corrective optics) resolved the problem and the extraordinary images that we get from Hubble are the result.

What are we to do, since optical quality is not something we can easily compare based on published specifications? The answer, I believe, is to become intelligent consumers of telescopes and other astronomical products. No telescope design is best for all purposes; every design is a compromise in some way or another and you need to decide what compromises are acceptable to you. You may want a highly portable and easy to set up telescope instead of one that is, say, larger, but harder to transport and more trouble to put together (sometimes in the dark). All of us have limitations on how much money we are able to spend on a telescope.

So, how do we resolve (pun intended) the problem that there is not a good metric available to us to compare the quality of the optics used in telescopes we might be considering?

The answer is to look through a lot of telescopes, and you can do this if you live in a large enough city to have an astronomy club and a club observing site. You can also do this at star parties. Check out the image quality and the light gathering capabilities in high-end telescopes of all designs, refractors, catadioptrics, reflectors, and any other design you can get a view through. Look at a planet or a deep sky object through each of the designs and see which view pleases you the best. The planet (or the moon) will, assuming good seeing, reveal something about the quality of the optics. Look through the telescope long enough to get one of those (rare) moments of excellent seeing. Look for the planets, the moon, or stars to 'snap' into focus. There should not be any ambiguity about where the correct focus point is. If the best focus point is uncertain, this doesn't speak well for the telescope optics. A deep sky object will give you a sense of the affect of the light gathering capability of the telescope.

Look for color correction when you look through a refractor. A well color corrected refractor will bring all colors of light to the same focus point simultaneously. A poorly corrected refractor will not – you will see colors at the edge of the moon or at the edge of a planet or a bright star.

The book *Star Testing Astronomical Telescopes*, by Harold Richard Suiter (published by Willmann-Bell) goes into substantial detail about how to evaluate telescope optics, with no instruments other than your eyes.

One more thing – your eyes are part of the optical train, and if you have astigmatism, like I do, your view of the universe will be the worse for it. You can get astigmatism correctors or eyeglass lenses that correct only astigmatism to solve this problem, and if you need one of these solutions, get one. Whether you need one or not depends on your optical configuration, and the degree of astigmatism that you have. It will make a substantial improvement in your observing experience. Check with your eye-care provider to get your astigmatism correction requirements.

The bottom line? If you get a good quality instrument of any design it will provide you with excellent observing opportunities for a long time. As your needs and plans change, you may want something else. Not a problem. Many of us who have been observing for a while have had several telescopes, and some of us have several now. Enjoy the sky with whatever optics you have – your unaided eyes, binoculars, or a telescope and develop the ability to recognize excellent optics when you see them.

Another Jupiter fireball!  
DR EMILY BALDWIN  
ASTRONOMY NOW  
Posted: 23 August 2010

A third Jupiter impact event in thirteen months has been captured by yet another diligent amateur observer.



Masayuki Tachikawa from Kyushu recorded this flash on Jupiter using a six-inch f/7.3 refractor and a webcam.

Japanese amateur astronomer Masayuki Tachikawa caught the possible fireball event in a video at 18:22 UT on 20 August as a brief, two second, brightening near the north edge of Jupiter's Northern Equatorial Belt. The flash, likely a small asteroid or comet burning up in Jupiter's atmosphere, was later confirmed by another Japanese astronomer Aoki Kazu. Astronomers watching Jupiter for two rotations after the event found no trace of the impact.

The flash bears a striking resemblance to that observed by Anthony Wesley and Christopher Go on 3 June this year, and follows the report of a larger impact event, also observed by Wesley in July 2009, that left a dark impact scar in Jupiter's atmosphere exactly fifteen years after the famous collision of comet Shoemaker Levy-9 with the gas giant.

The observations not only demonstrate the importance of amateur observations for monitoring our Solar System environment, but also the relative frequency of impact events still occurring in our planetary neighbourhood today.