



ASTRAL PROJECTIONS

May 2011
Volume 22 Issue 5

Meeting Schedule

May 13th Meeting: "Famous Astronomers VI" Presented by Bob Salvatore

Date: Friday, 5/13/2011

Time: 7:00 PM - 10:00 PM

Location: Robert J. Novins Planetarium, College Drive, Ocean County College, Toms River, NJ 08754

June 10th Meeting:
"Telescope Equipment Show & Tell" Presented by All Members

Date: Friday, 6/10/2011

Time: 7:00 PM - 10:00 PM

Location: Robert J. Novins Planetarium, College Drive, Ocean County College, Toms River, NJ 08754

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Astronomy Day 2011



Erin Forman telling stories about the night sky

Thank you all for making this year's Astronomy Day event a success. Even though the turnout for the daytime festivities wasn't as good as we would have liked, I still think the two dozen or so guests really enjoyed our efforts to enlighten them on the different aspects of astronomy and if we inspired only one or two of them to pursue astronomy as a career or hobby then we have done a great thing.

More Astronomy Day pictures on page 6

What is star hopping?

We live in the age of GO TO telescopes. With only a push of a button you travel from the Lunar neighborhood to the far reaches of deep space in just a few seconds. Despite all of this easily available technology, many amateur astronomers do their observing without the use of GO TO telescopes, and some say that here resides the true joy of observing. But how is it possible to find a dim galaxy or nebula lost among all those thousands of stars? Star hopping is the answer.

Star hopping is used whenever one intends to find a celestial object spreading a dim light, invisible with the naked eye. It consists of successive leaps from a star that is visible either with the naked eye or with a finder-scope, to another star and so forth until the aimed target is reached.

Before you go under the stars with a telescope, make sure you know some prominent bright stars and constellations. You will use them as a stepping off point to find those constellations and stars that you don't know.

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Equipment

The equipment you need is pretty basic: a star atlas and a decent finder-scope attached to your telescope. The atlas of choice for beginners is Sky Atlas 2000, after you gain more experience a more comprehensive atlas like Uranometia 2000 will do better.

Sky Atlas 2000 indicates stars up to magnitude 8.5 and about 2500 deep sky objects. The scale of the maps is about 8-mm per degree. Knowing the scale will prove useful a little later when we determine the visual field of the eyepieces.

Determining visual fields

Once you have the atlas, the next step is to determine the visual field of the eyepiece you are using. One first method is used in case you know the apparent field of the eyepiece and its magnifying power when assembled to the telescope.

In order to determine the power given by the eyepiece, you should divide the focal length of the instrument by that of the eyepiece. If for example we have an eyepiece with an apparent field of 50 degrees, which assembled to the telescope gives a power of 30x, then the visual field of the eyepiece will be equal to the apparent field divided by the magnifying power of the eyepiece, that is $50/30$, which is about 1.7 degrees.

In order to find out the visual field of the eyepiece in this particular case, you should direct the instrument to a star as close as possible to the celestial equator, set the star at the edge of the visual field and measure the time it takes for the star to cross the eyepiece, without moving the instrument. Knowing that a star near the celestial equator will move one degree every four minutes, you can calculate the visual field of the eyepiece.

Now that you know the visual field and the scale of the atlas you can make either wire or plastic rings that will represent the field. If the eyepiece has a visual field of two degrees and the scale of the atlas measures 8-mm per degree, the ring should have a diameter of 16-mm. The ring is extremely useful when the object to be localized is found in an area of the sky with very few stars, normally it is not used too often.

In order to find a celestial object with the star hopping method, the visual field of your eyepiece should be as large as possible, so don't use great magnification. This

way you will be able to see several stars in the field, and will have reference points. Only when you have found the desired object should you use eyepieces with great magnifying power.

The finder-scope

The finder attached to the main instrument is also very important. It would be great to have a finder with an aperture as large as possible (50-mm would do best). With a six to seven degree visual field, such a finder will point far more stars than visible with the naked eye, thus being very easy to identify the area where the target is. You can determine the visual field of the finder with the help of methods described so far.

Coping with mirror or inverted images

According to the type of instrument you are using, the images will be either inverted or reversed (mirror image). Newtonian telescopes give an inverted image (north becomes south), while instruments with a diagonal (a small mirror) will give reversed images.

The solution every time you use a Newtonian telescope is simple: turn the maps upside down. The problem occurs with instruments using a diagonal. A solution is to flip over your sky chart and shine a light behind it to view a mirror image of the printing through the paper.

A little theory...

In order to start a star hop the first step would be to identify on the atlas the area where your aimed object is. After this find a star, or a group of brighter stars visible with the naked eye and situated as close as possible to the target.

Without looking through the finder or telescope, with both eyes opened, look along the instrument and point it to the area of interest. The point is to center in the finder, after having consulted the atlas, a group of stars that stand out among the rest. It is extremely important that this point of reference should fit into the visual field of the finder so that it may be recognized even if it is not centered perfectly.

Confusions may occur in case you mistake a group for another, only to finally find yourself a few degrees away from the targeted object. The solution is to associate a familiar shape to a group of stars (line, triangle, circle or square), thus you will succeed in memorizing them more easily.

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Whats up this month?

May 2011 Celestial Events

1st Dawn: With binoculars, observers can see the thin crescent Moon clustered with Venus, Jupiter, Mercury, and faint Mars shortly before sunrise.

3rd New Moon (2:51 am EDT)

4th Dusk: the Pleiades are lower right of the thin crescent Moon low in the West-Northwest after sunset.

6th Predawn: The Eta Aquarid Meteor shower peaks.

7th-15th Dawn: With binoculars look for Mercury less than 11/2 deg. lower right of Venus with Jupiter fitting into the same field of view. Track the changing configuration of this trio each morning.

10th First-Quarter Moon (4:33 pm EDT)

13th-14th Evening: The Moon is far to Saturn's lower right on the 13th and closer to Spica's lower right on the 14th.

17th Full Moon (7:09 am EDT)

20th-21st Dawn: Venus forms a right triangle with Mercury below it and faint Mars to its left.

24th Last-Quarter Moon (2:52 pm EDT)

29th-31st Dawn: The waning crescent Moon is upper left of Jupiter on the 29th and clustered with Venus and Mercury on the 31st.

ASTRA Public Outreach & Star Parties Schedule for May/June

Star Night Public Outreach

General observation of night sky for upper elementary students. Please contact Ro Spedalieri Treasurer@astra-nj.org if you wish to volunteer to help out.

Date: Friday, 5/20/2011

Time: 8:00 PM - 10:30 PM

Location: Long Beach Island Grade School, 201 West 20th Street, Ship Bottom, NJ 08008

Lighthouse #1 Star Party

This is a private star party for ASTRA members and Earthwatch/Drexel students only.

Date: Friday, 6/17/2011

Time: 6:00 PM - 11:00 PM

Location: The Lighthouse Center, 7th Street & Navajo Dr, Waretown, NJ 08758

Check the online message board on the date of the star party for up to date information on these events.



Astronomical League National Headquarters
9201 Ward Parkway; Suite 100
Kansas City, MO 64114
1-816-333-7759 or www.astroleague.org

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 Spedalieri (Treasurer@astra-nj.org)

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 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

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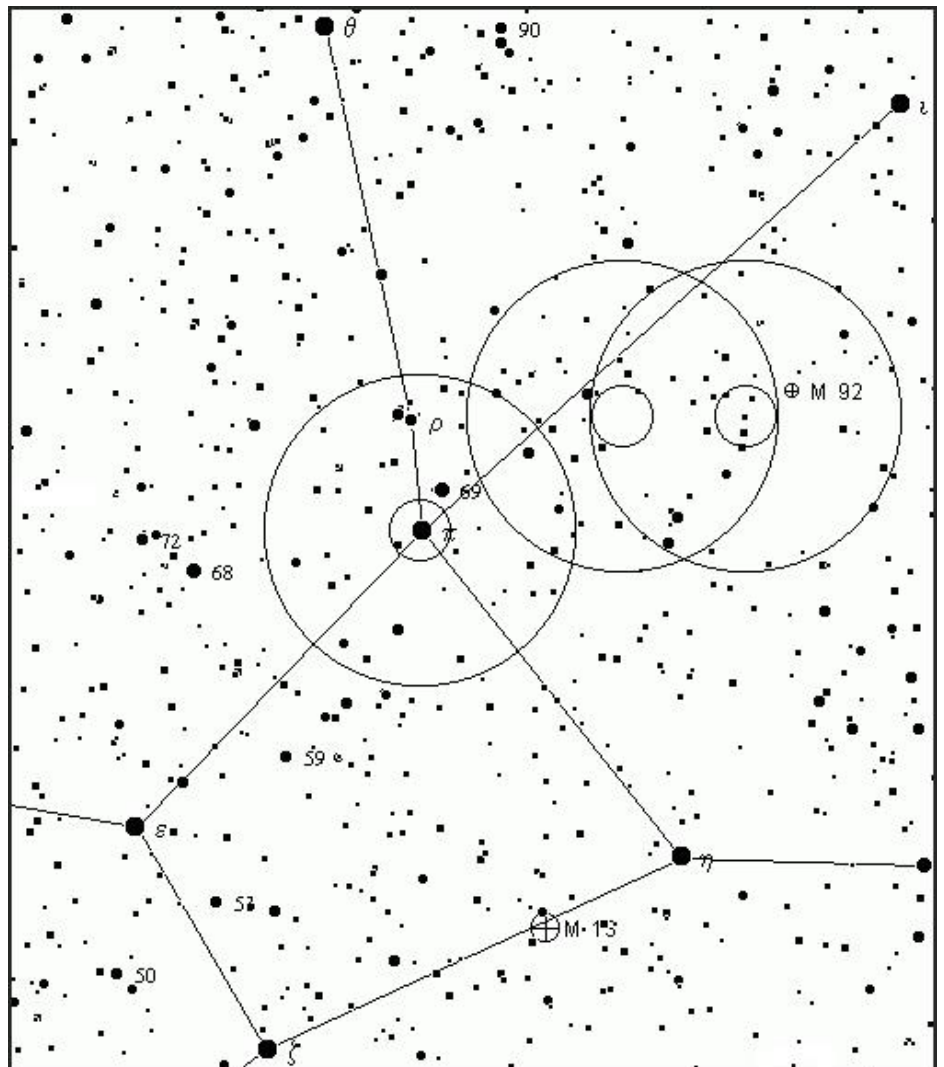


And the real thing. Star hopping exercise

M92 is a beautiful globular cluster in Hercules, about 26,000 light years distant from Earth. It is an easy target even for small telescopes, and on clear nights it can be spotted with binoculars, if you observe on a dark sky far from city lights.

For this star hopping example let's say that your finder-scope's field is five degrees and the eyepiece field is one degree. The large circle represents the field of the finder-scope and the small circle is the field of the eyepiece.

To get to M92 first locate the bright star Pi Herculis, shining at 3rd magnitude. Center it in the field of your finder-scope and sweep one more field, following the line drawn from Pi to Iota Herculis. At the edge of the field look for four stars arranged in a line, and center them in your eyepiece. Move one degree in the direction of Iota Herculis and M92 will be right in the center of your eyepiece.



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 at President@astra-nj.org

BOOKS

1) **The National Air and Space Museum**

Second Edition by C.D.B. Bryan

2) **Milestones of Aviation** Smithsonian

Institution National Air and Space Museum

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

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 e-mail John Endreson at President@astra-nj.org

Club Telescopes



A.S.T.R.A. owns four small telescopes

6-inch Dobsonian

8-inch Dobsonian

80mm Celestron Refractor

120mm EQ AstroView Refractor.

These telescopes are available for club members to borrow and use for a month or two at a time.

Wanted!

No longer used telescopes, Telescope parts, and accessories.

E-mail John Endreson at President@astra-nj.org
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



Bob Salvador along with his daughter Katie, cook up some celestial fun.



Mauro Bacolo with some space bending discussions with the press.



Carlton Lee with Pat McNulty serve-up some refreshments.



Vic Palmieri and Phil Zolner look for their next vacation spot.



The kids big and small loved the presentations



Barbara Novick's smashing presentation on asteroid impacts

I also want to thank those of you who turned out for the nighttime observing. It was nice to see so many guests show up to observe the night sky. I estimate close to 100 guests came out and thanks to you all they got to see Saturn along with some other deep sky objects. This is why ASTRA has the best astronomy public outreach program in New Jersey.