



# ASTRAL PROJECTIONS

July 2014  
Volume 25 Issue 7



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**JUNE MEETING:** Megan Vicidomini (one of our young members) gave an excellent talk about the many missions to Mars and included many of the great pictures from those missions.

**JULY MEETING:** Sam Micovic will continue his talks – this time about the Solar System.

## Announcements

**JUNIOR ASTRA:** Does anyone have any thoughts on a junior section of ASTRA? Members had mentioned this and we will discuss at the next meeting.

**BEACH HAVEN SCHOOL:** We have sent a letter of support for the Beach Haven Schools Grant Application. If they receive the grant of \$10,000, they have asked us to help them on setting up and using the telescope that they buy, and possibly to support any star parties.

**PERSEID PICNIC:** This year's ASTRA Picnic (open to ASTRA members and guests) will be held at the home of Marge and Rich Brady on Sunday August 10<sup>th</sup> from 3:00 PM to 7:00 PM. The cost will be \$5.00 per person up to a max of \$10.00 per family. That will cover meat (Hotdogs, Hamburgers, Sausage, and Chicken), coffee, and paper goods.

Each family should bring a covered dish to add to the food such as: baked ziti, pasta salad, garden salad, coleslaw, potato salad, pretzels, potato chips, dips, cake, cookies, soda or any other dish you would like to bring.

Please let me know by Monday August 4<sup>th</sup> if you intend to attend by calling me at 732-840-0137 or e-mail me at [President@astra-nj.org](mailto:President@astra-nj.org). Coordinate covered dish with Marge at the number above.

## What's up This Month?

**BRANCH COUNTY PARK:** Come join us under star filled skies to observe the Universe. Date: Saturday, 7/19/2014. Time: 9:00 PM - 11:00 PM. Location: Jakes Branch County Park, 1054 Sunset Rd, Beachwood, NJ 08722.

**BRANCH COUNTY PARK:** Come join us under star filled skies to observe the Universe. Date: Saturday, 8/2/2014. Time: 9:00 PM - 11:00 PM. Location: Jakes Branch County Park, 1054 Sunset Rd, Beachwood, NJ 08722.

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



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# A Glorious Gravitational Lens

By Dr. Ethan Siegel

As we look at the universe on larger and larger scales, from stars to galaxies to groups to the largest galaxy clusters, we become able to perceive objects that are significantly farther away. But as we consider these larger classes of objects, they don't merely emit increased amounts of light, but they *also* contain increased amounts of **mass**. Under the best of circumstances, these gravitational clumps can open up a window to the distant universe well beyond what any astronomer could hope to see otherwise.

The oldest style of telescope is the refractor, where light from an arbitrarily distant source is passed through a converging lens. The incoming light rays—initially spread over a large area—are brought together at a point on the opposite side of the lens, with light rays from significantly closer sources bent in characteristic ways as well. While the universe doesn't consist of large optical lenses, **mass itself** is capable of bending light in accord with Einstein's theory of General Relativity, and acts as a *gravitational lens*!

The first prediction that real-life galaxy clusters would behave as such lenses came from Fritz Zwicky in 1937. These foreground masses would lead to multiple images and distorted arcs of the same lensed background object, all of which would be magnified as well. It wasn't until 1979, however, that this process was confirmed with the observation of the Twin Quasar: QSO 0957+561. Gravitational lensing requires a serendipitous alignment of a massive foreground galaxy cluster with a background galaxy (or cluster) in the right location to be seen by an observer at our location, but the universe is kind enough to provide us with many such examples of this good fortune, including one accessible to astrophotographers with 11" scopes and larger: Abell 2218.

Located in the Constellation of Draco at position (J2000): R.A. 16h 35m 54s, Dec. +66° 13' 00" (about 2° North of the star 18 Draconis), Abell 2218 is an extremely massive cluster of about 10,000 galaxies located 2 billion light years away, but it's *also* located quite close to the zenith for northern hemisphere observers, making it a great target for deep-sky astrophotography. Multiple images and sweeping arcs abound between magnitudes 17 and 20, and include galaxies at a variety of redshifts ranging from  $z=0.7$  all the way up to  $z=2.5$ , with farther ones at even fainter magnitudes unveiled by Hubble. For those looking for an astronomical challenge this summer, take a shot at Abell 2218, a cluster responsible for perhaps the most glorious gravitational lens visible from Earth!



*Abell 2218. Image credit: NASA, ESA, and Johan Richard (Caltech). Acknowledgement: Davide de Martin & James Long (ESA/Hubble).*

*Learn about current efforts to study gravitational lensing using NASA facilities:*  
<http://www.nasa.gov/press/2014/january/nasas-fermi-makes-first-gamma-ray-study-of-a-gravitational-lens/>.

*Kids can learn about gravity at NASA's Space Place:* <http://spaceplace.nasa.gov/what-is-gravity/>



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CELESTIAL EVENTS FOR JULY

Mercury is visible in the dawn sky and is getting brighter later in the month. Venus is visible low in the ENE in the dawn twilight getting closer to the Sun. Mars is in Virgo in the south west evening sky. Jupiter gets closer to the Sun and is not visible in the evening twilight. Saturn is visible in Libra in south west sky and sets after midnight. Highlights for the month:

- 2 Venus 4° N of Aldebaran
- 5 First Quarter Moon
- 6 Mars 0.2° S of Moon
- 8 Saturn 0.4° N of Moon
- 12 Full Moon
- Mars 1.4° N of Spica
- 15 Mercury 3° S of M35
- 20 Venus 1.5° S of M35
- 22 Aldebaran 1.8° S of Moon
- 24 Venus 4° N of Moon
- 25 Mercury 5° N of Moon
- 26 New Moon

Source: Observer's handbook

**CLUB TELESCOPES:** A.S.T.R.A. owns seven small telescopes:

- 6-inch Dobsonian (in need of repairs)
- 8-inch Dobsonian
- 80mm Celestron Refractor
- 120mm EQ AstroView Refractor.
- Lunt 35mm H-Alpha solar scope
- 8-inch Celestron NexStar 8i SE
- 60mm Meade EQ refractor

These telescopes are available for club members to borrow and use for a month or two at a time. Contact John Endreson at [Telescope\\_Loan@astra-nj.org](mailto:Telescope_Loan@astra-nj.org) to borrow a telescope.

**ASTRA-WEAR – 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). Order form is on the ASTRA website.

**ASTRA LIBRARY OF BOOKS AND DVDS:** Many books and DVDs are available for loan from the ASTRA Library for a one month period. A list of these items is available on the ASTRA website. Request for these items must be made prior to our regular meeting and returned by the following meeting. Please e-mail your request for these items to our Librarian Barbara Novick at [Library-Loan@astra-nj.org](mailto:Library-Loan@astra-nj.org) or call her at 732-840-3111.

**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) to announce it at a meeting and send the advertisement to the newsletter (See Newsletter below).

**ASTRONOMICAL LEAGUE MEMBER SOCIETY**

Astronomical League National Headquarters, 9201 Ward Parkway; Suite 100, Kansas City, MO 64114, 1-816-333-7759 or [www.astroleague.org](http://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](mailto:Treasurer@astra-nj.org))

**EXECUTIVE BOARD**

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**NEWSLETTER:** E-mail material (meeting reports, observing reports, or other items of interest) to [Newsletter@astra-nj.org](mailto:Newsletter@astra-nj.org).

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



# ASTRA

## REMAINING SCHEDULE FOR 2014

Jake's Branch and other star parties not included  
(Comments and Suggestions are Welcome)

- Jul 11\*      Solar System – Sam Micovic
- Aug 8        No Meeting
- Aug 10      Sunday – Perseid Picnic*
- Sep 6       Saturday – Fall Star Watch – Public star party at OCC. (Moon 4 days after 1<sup>st</sup> Qtr)*
- Sep 12\*     Chemistry in the Universe – Matthew McCue
- Oct 10\*     Planetarium Show
- Nov 14\*     Solar Update – Bill Edelen
- Nov 29      Saturday – Winter Star Watch – Public star party at OCC. (Moon 1<sup>st</sup> Qtr)*
- Dec 12\*     Awards, Open Meeting, Elections

\* Regular Meeting