



ASTRAL PROJECTIONS

September 2013
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JULY MEETING: Ryan Knipple presented material on Pluto and Kuiper Belt Objects. Ryan gave us a great presentation on Pluto and answered many questions from the members. A good dialogue was started among the members. Thanks Ryan!

SEPTEMBER MEETING: Sep 13, 2013, Sam Micovic will present a terminology guide on astronomy vocabulary, the solar system, and living in space.

Announcements

PLANETARIUM GIFT SHOP: If any members have any suggestions about what they think should be available in the Planetarium gift shop, they can send their suggestions to Maria at maria_class@portal.ocean.edu.

What's up this month?

JAKE'S BRANCH COUNTY PARK: Come join us under star filled skies to observe the Universe. Saturday, September 7, 2013, 8:00 PM - 11:00 PM. Location: Jakes Branch County Park, Double Trouble Rd, Beachwood, NJ 08722

JAKES BRANCH CAMP OUT: Camp out under the stars, Saturday, September 14, 2013, 7:00 PM - 10:30 PM. Location: Jakes Branch County Park, Double Trouble Rd, Beachwood, NJ 08722

FALL STAR WATCH: Members of the Astronomical Society of the Toms River Area (ASTRA) will setup their telescopes on campus to share views of the planets and stars. We will explore the constellations and other celestial objects of the fall season. Free Event Ocean County College Campus, Saturday, September 28, 2013, 8:00 PM - 11:00 PM. Location: Ocean County College, In front of the planetarium, TOMS RIVER, NJ 08723

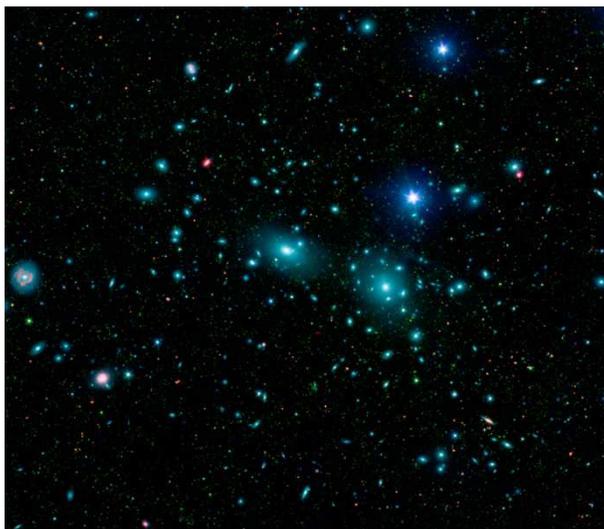
Check the online message board on the date of the star party for up to date information on these events and directions.

Size Does Matter, But So Does Dark Energy

By Dr. Ethan Siegel

Here in our own galactic backyard, the Milky Way contains some 200-400 billion stars, and that's not even the biggest galaxy in our own local group. Andromeda (M31) is even bigger and more massive than we are, made up of around a *trillion* stars! When you throw in the Triangulum Galaxy (M33), the Large and Small Magellanic Clouds, and the dozens of dwarf galaxies and hundreds of globular clusters gravitationally bound to us and our nearest neighbors, our local group sure does seem impressive.

Yet that's just chicken feed compared to the largest structures in the universe. Giant clusters and superclusters of galaxies, containing thousands of times the mass of our entire local group, can be found omnidirectionally with telescope surveys. Perhaps the two most famous examples are the nearby Virgo Cluster and the somewhat more distant Coma Supercluster, the latter containing more than 3,000 galaxies. There are millions of giant clusters like this in our observable universe, and the gravitational forces at play are absolutely tremendous: there are literally *quadrillions* of times the mass of our Sun in these systems.



Digital mosaic of infrared light (courtesy of Spitzer) and visible light (SDSS) of the Coma Cluster, the largest member of the Coma Supercluster. Image credit: NASA / JPL-Caltech / Goddard Space Flight Center / Sloan Digital Sky Survey.

The largest superclusters line up along filaments, forming a great cosmic web of structure with huge intergalactic voids in between the galaxy-rich regions. These galaxy filaments span anywhere from hundreds of millions of light-years all the way up to more than a *billion* light years in length. The CfA2 Great Wall, the Sloan Great Wall, and most recently, the Huge-LQG (Large Quasar Group) are the largest known ones, with the Huge-LQG -- a group of at least 73 quasars -- apparently stretching nearly 4 billion light years in its longest direction: more than 5% of the observable universe! With more mass than a million Milky Way galaxies in there, this structure is a puzzle for cosmology.

You see, with the normal matter, dark matter, and dark energy in our universe, there's an upper limit to the size of gravitationally bound filaments that should form. The Huge-LQG, if real, is more than *double* the size of that largest predicted structure, and this could cast doubts on the core principle of cosmology: that on the largest scales, the universe is roughly uniform everywhere. But this might not pose a problem at all, thanks to an unlikely culprit: **dark energy**. Just as the local group is part of the Virgo Supercluster but recedes from it, and the Leo Cluster -- a large member of the Coma Supercluster -- is accelerating away from Coma, it's conceivable that the Huge-LQG isn't a single, bound structure at all, but will eventually be driven apart by dark energy. Either way, we're just a tiny drop in the vast cosmic ocean, on the outskirts of its rich, yet barely fathomable depths.

Learn about the many ways in which NASA strives to uncover the mysteries of the universe: <http://science.nasa.gov/astrophysics/>. Kids can make their own clusters of galaxies by checking out The Space Place's fun galactic mobile activity: <http://spaceplace.nasa.gov/galactic-mobile/>





CELESTIAL EVENTS FOR September:

Mercury is in the evening twilight WSW for most of the month. Venus is low in the WSW evening sky. Mars is Cancer in the morning sky – moving to Leo by end of month. Jupiter rises after midnight – in Gemini. Saturn is low in the WSW evening twilight. Highlights for the month:

- 5 New Moon
Venus 1.8° N of Spica
- 8 Mars in Beehive (M44)
- 9 Saturn 2° N of Moon
- 12 First Quarter
- 19 Full Moon
- 20 Venus 4° S of Saturn
- 22 Autumnal Equinox (20:44)
- 24 Mercury 0.8° N of Spica
- 27 Last Quarter Moon
- 28 Jupiter 5° N of Moon

Credit: Observer's handbook



CLUB TELESCOPES:

A.S.T.R.A. owns five 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

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

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. 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 or call her at 732-840-3111.

ASTRONOMICAL LEAGUE MEMBER SOCIETY

Astronomical League National Headquarters

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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 Spedaliere (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).

FOR SALE: Tele-vue Radian eyepiece, 14mm. Like new in original packaging. Rarely used. \$120.00 (one half original price). Contact Phil Zollner: pazap at optimum.net or 732-905-0889

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



EXECUTIVE BOARD

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SCHEDULE FOR 2013: If anyone would like to do a presentation or suggest one, please contact the executive board.

ASTRA TENTATIVE SCHEDULE FOR 2013

Jake's Branch and other star parties not included

(Comments and Suggestions are Welcome)

Jan 11 Telescope Workshop
Feb 8 Cancelled
Mar 8 Top Stories for 2012 – Rich Brady
Apr 12 Famous Astronomers VIII – Bob Salvatore
May 10 Telescope Equipment Show & Tell – All Members
Jun 14 Astronomical Pronunciation Guide – Matthew McCue
Jul 12 Pluto and Kuiper Belt Objects – Ryan Kipple
Aug 9 No Meeting
Aug 10 Saturday - Perseid Picnic
Sep 13 Terminology Guide (?) – Sam Micovic
Sep 28 Fall Star Watch (8 – 11 PM)
Oct 11 Planetarium Show
Nov 8 Tentative – Other Telescopes – Rich Brady
Dec 13 Awards, Open Meeting
Dec 21 Winter Star Watch (7 – 11 PM)

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

