



# ASTRAL PROJECTIONS

MARCH 2015  
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A.S.T.R.A.

Robert J. Novins Planetarium  
Ocean County College  
P.O. Box 2001  
Toms River NJ 08754-2001

## Upcoming Events

### “SPECIAL EVENT” on Friday March 13 (Replaces Meeting)

Guest Speaker Al Nagler, an optical designer and entrepreneur who founded Tele Vue Optics, will give a talk titled “I Thank My Lucky Stars!”

It will be held at the Robert J. Novins Planetarium located on the Ocean County College campus (Bldg. 13 near parking lot 2) from 7pm to 9pm. Reservations are required. See page 2 for more information.”

### Star Party on Saturday, March 21st

Join us as we set up our telescopes and observe the universe from 6:00pm to 9:00pm at [Jakes Branch County Park, 1054 Sunset Road, Beachwood NJ](#)

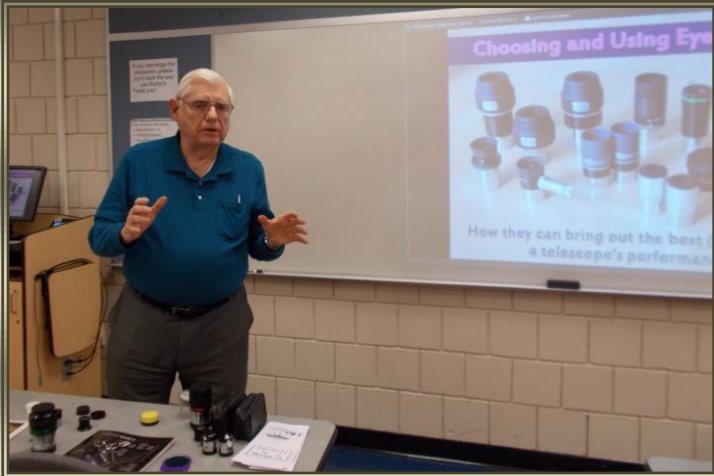
### Spring Star Party on Saturday, March 28th

Join us as we set up our telescopes and observe the universe from 7:30pm to 10:30pm at the [Robert J. Novins Planetarium](#) located on the Ocean County College campus, Building 13

### EVENT CANCELLATIONS

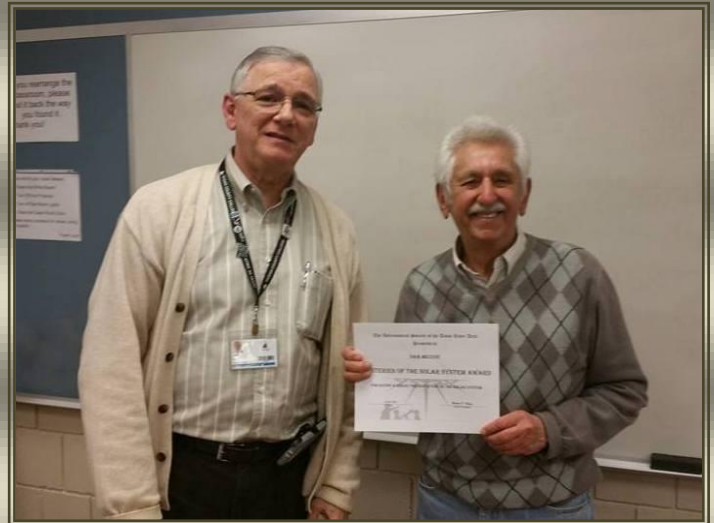
Two hours before the event start time please check out the ASTRA Message Board at <http://forum.astra-nj.org/viewforum.php?f=4> or call the ASTRA Hotline: 609-971-3331

## Recap



ASTRA member Phil Zollner gave a presentation about eyepieces at February's meeting.

*Photos by Matthew McCue and Richard Brady*



ASTRA member Sam Micovic received "Mysteries of the Solar System Award" from ex-President Richard Brady. In 2014, he gave a great presentation on the solar system.

*Photo by John Endreson*

### **SPECIAL EVENT – LIMITED SEATS AVAILABLE**

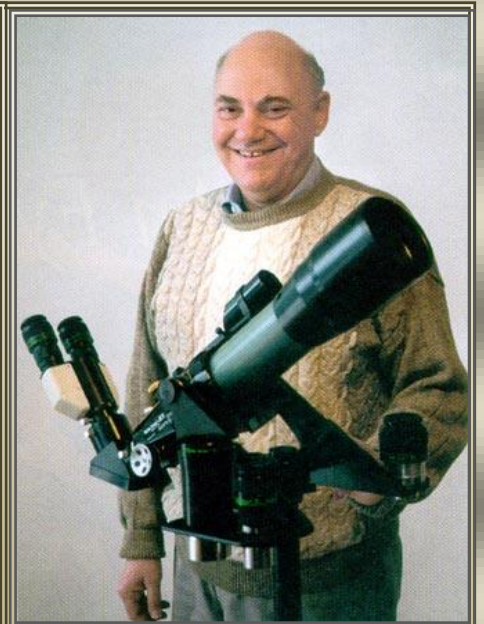
Guest Speaker: Al Nagler, an optical designer and entrepreneur who founded Tele Vue Optics will give a talk titled "I Thank My Lucky Stars!"

Description: "How a kid from the Bronx, with a love for astronomy, went on to create optical systems that bridged astronaut training with products to enhance the visual impact of our wondrous universe."

When: March 13<sup>th</sup> at 7pm (will replace our regular monthly meeting)

Where: Robert J Novins Planetarium

"By invitation only. First-come, first-served. For reservations, send an email to [President@astra-nj.org](mailto:President@astra-nj.org) or call (732) 350-1740. If there is no answer, leave a message with a call-back number."





## The heavyweight champion of the Cosmos

By Dr. Ethan Siegel

As crazy as it once seemed, we once assumed that the Earth was the largest thing in all the universe. 2,500 years ago, the Greek philosopher Anaxagoras was ridiculed for suggesting that the Sun might be even larger than the Peloponnesus peninsula, about 16% of modern-day Greece. Today, we know that planets are dwarfed by stars, which themselves are bound together by the billions or even trillions into galaxies.

But gravitationally bound structures extend far beyond galaxies, which themselves can bind together into massive clusters across the cosmos. While dark energy may be driving most galaxy clusters apart from one another, preventing our local group from falling into the Virgo Cluster, for example, on occasion, huge galaxy clusters can merge, forming the largest gravitationally bound structures in the universe.

Take the "El Gordo" galaxy cluster, catalogued as ACT-CL J0102-4915. It's the largest known galaxy cluster in the distant universe. A galaxy like the Milky Way might contain a few hundred billion stars and up to just over a trillion ( $10^{12}$ ) solar masses worth of matter, the El Gordo cluster has an estimated mass of  $3 \times 10^{15}$  solar masses, or 3,000 times as much as our own galaxy! The way we've figured this out is fascinating. By seeing how the shapes of background galaxies are distorted into more elliptical-than-average shapes along a particular set of axes, we can reconstruct how much mass is present in the cluster: a phenomenon known as weak gravitational lensing.

That reconstruction is shown in blue, but doesn't match up with where the X-rays are, which are shown in pink! This is because, when galaxy clusters collide, the neutral gas inside heats up to emit X-rays, but the individual galaxies (mostly) and dark matter (completely) pass through one another, resulting in a displacement of the cluster's mass from its center. This has been observed before in objects like the Bullet Cluster, but El Gordo is much younger and farther away. At 10 billion light-years distant, the light reaching us now was emitted more than 7 billion years ago, when the universe was less than half its present age.

It's a good thing, too, because about 6 billion years ago, the universe began accelerating, meaning that El Gordo just might be the largest cosmic heavyweight of all. There's still more universe left to explore, but for right now, this is the heavyweight champion of the distant universe!

Learn more about "El Gordo" here: <http://www.nasa.gov/press/2014/april/nasa-hubble-team-finds-monster-el-gordo-galaxy-cluster-bigger-than-thought/>

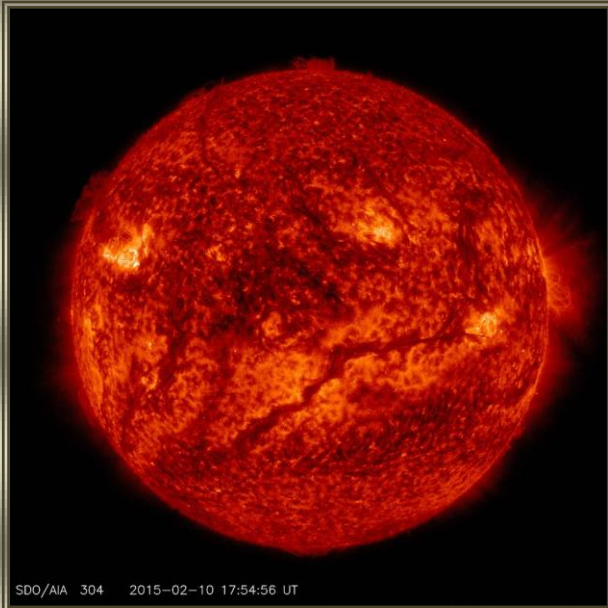


*Image credit: NASA, ESA, J. Jee (UC Davis), J. Hughes (Rutgers U.), F. Menanteau (Rutgers U. and UIUC), C. Sifon (Leiden Observatory), R. Mandelbaum (Carnegie Mellon U.), L. Barrientos (Universidad Catolica de Chile), and K. Ng (UC Davis). X-rays are shown in pink from Chandra; the overall matter density is shown in blue, from lensing derived from the Hubble space telescope. 10 billion light-years distant, El Gordo is the most massive galaxy cluster ever found.*



# NASA Highlight

Information from [www.nasa.gov/](http://www.nasa.gov/)



## Giant Filament Seen on the Sun

A dark, snaking line across the lower half of the sun in this Feb. 10, 2015 image from NASA's Solar Dynamics Observatory (SDO) shows a filament of solar material hovering above the sun's surface. SDO shows colder material as dark and hotter material as light, so the line is, in fact, an enormous swatch of colder material hovering in the sun's atmosphere, the corona. Stretched out, that line – or solar filament as scientists call it – would be more than 533,000 miles long

*Image Credit: NASA/SDO*

## 2015 CALENDAR

Mar 13 [ASTRA Meeting \(7pm – 10pm\)](#)  
Special Event: Guest speaker Al Nagler  
"I Thank My Lucky Stars!"

Mar 21 [Star Party \(6pm – 9pm\)](#)  
Public star party at Jakes Branch

Mar 28 [Spring Star Party \(7:30pm to 10:30pm\)](#)  
Public Star Party at OCC Planetarium

Apr 10 [ASTRA Meeting \(7pm – 10pm\)](#)  
Ro Spedaliere will host Astronomy Games

Apr 25 [Astronomy Day at Jakes Branch](#)  
Daytime Event (3pm to 5pm)  
Night Time Observing (7:30pm to 11pm)

May 8 [ASTRA Meeting \(7pm – 10pm\)](#)  
Presentation by Sam Micovic titled  
"18 Months on Mars"

May 16 [Star Party \(7:30pm – 10pm\)](#)  
Public star party at Jakes Branch

Jun 12 [ASTRA Meeting \(7pm – 10pm\)](#)

Jun 13 [Star Party \(8pm – 11pm\)](#)  
Public star party at Jakes Branch

Jun 20 [Summer Star Party \(8:30pm to 11pm\)](#)  
Public Star Party at OCC Planetarium

Jul 10 [ASTRA Meeting \(7pm – 10pm\)](#)

Aug *No Meeting*

Sep 11 [ASTRA Meeting \(7pm – 10pm\)](#)

Sep 19 [Fall Star Party \(7:30pm to 10:30pm\)](#)  
Public Star Party at OCC Planetarium

Oct 9 [ASTRA Meeting \(7pm – 10pm\)](#)

Nov 13 [ASTRA Meeting \(7pm – 10pm\)](#)

Dec 11 [ASTRA Meeting \(7pm – 10pm\)](#)  
Awards, Election

Dec 19 [Winter Star Party \(7pm to 10pm\)](#)  
Public Star Party at OCC Planetarium

## **CELESTIAL EVENTS FOR MARCH 2015**

Coordinated Universal Time (UTC)

**March 5 - Full Moon.** This phase occurs at 18:05 UTC.

**March 20 - New Moon.** This phase occurs at 09:36 UTC.

**March 20 - Total Solar Eclipse.** The path of totality will begin in the central Atlantic Ocean and move north across Greenland and into northern Siberia.

**March 20 - March Equinox.** The March equinox occurs at 22:45 UTC.

Source: <http://www.seasky.org/>

## **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@astranj.org](mailto:Treasurer@astranj.org))

## **ASTRONOMICAL HELP OR ITEMS FOR SALE**

If you have an astronomical item to sell, or need help with an astronomical problem (a question, or telescope setup) contact the President [President@astranj.org](mailto:President@astranj.org) to have it announced at a meeting. To advertise in our monthly newsletter please send all information to [astranewsletter@gmail.com](mailto:astranewsletter@gmail.com)



**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 [astrawear@estitches.com](mailto:astrawear@estitches.com). Order form is on the ASTRA website.

**APRIL NEWSLETTER DEADLINE:  
MARCH 20, 2015**

## **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 John Endreson at [Library-Loan@astranj.org](mailto:Library-Loan@astranj.org) or call him at 609-971-3331.



## **CLUB TELESCOPES**

After suitable training, club members may borrow these instruments for a month at a time. Please contact John Endreson at [Telescope\\_Loan@astranj.org](mailto:Telescope_Loan@astranj.org) to make arrangements

### **Available Equipment**

- Dobsonian 8 inch, f/4 telescope with a 1.25 Helical Focuser
- Celestron SP-C80 Japanese-made 80mm, f/11 achromatic refractor
- Orion 'AstroView' 120mm, f/8.3 refractor telescope
- Celestron 8-inch Schmidt-Cassegrain telescope with Nexstar
- Lunt 35mm Hydrogen Alpha Solar Scope
- Celestron SkyMaster 15x70 binocular