



ASTRAL PROJECTIONS

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Upcoming Events

Monthly Meeting on Friday, February 13th

The next meeting will be held at the [Robert J. Novins Planetarium](#) located on the Ocean County College campus (Bldg. 13 next to parking lot 2) from 7pm to 10pm.

Presentation by Phil Zollner about eyepieces. Members are invited to bring in their eyepieces

2015 A.S.T.R.A. MEMBERSHIP DUES ARE DUE

(PLEASE SEE MEMBERSHIP APPLICATION ON PAGE 6)

Star Party on Saturday, February 21st

Join us as we set up our telescopes and observe the universe from 5:00pm to 8:00pm at [Jakes Branch County Park, 1054 Sunset Road, Beachwood NJ](#)

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

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

Recap

JANUARY'S MEETING:

Members Bob Salvatore and John Endreson gave pointers to beginners about buying and using telescopes and eyepieces. Phil Zollner showed a member how to use her "Gailileo brand" 4-inch Newtonian F/11 telescope, which has an unusual altazimuth mount.

John Endreson has become our club librarian.

SPECIAL EVENT

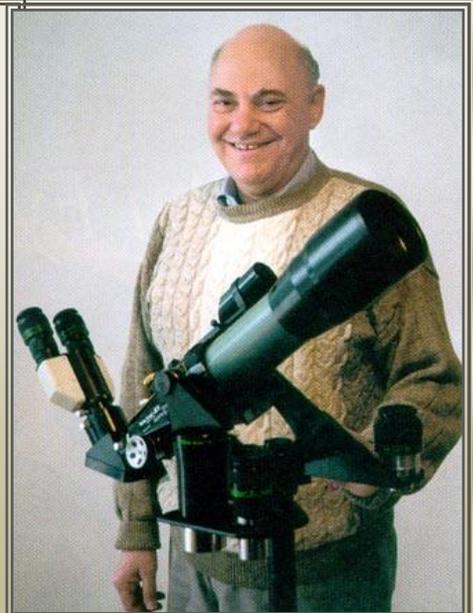
Guest Speaker: Al Nagler, an optical designer and entrepreneur who founded Tele Vue Optics will give a talk titled "I Thank My Lucky Stars!"

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 13th at 7pm (will replace our regular monthly meeting)

Where: Robert J Novins Planetarium

By invitation only. First-come, first-served. ASTRA club members are invited before others, but should reply as soon as possible to ensure a seat. If you are a club member and have not received an invitation, send an email to President@astra-nj.org or call (732) 350-1740 and leave a message."



2015 CALENDAR

Feb 13 ASTRA Meeting (7pm – 10pm)
Presentation about eyepieces
by Phil Zollner

Feb 21 Star Party (5pm – 8pm)
Public star party at Jakes Branch

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

Apr 10 ASTRA Meeting (7pm – 10pm)

May 8 ASTRA Meeting (7pm – 10pm)

Jun 12 ASTRA Meeting (7pm – 10pm)

Jul 10 ASTRA Meeting (7pm – 10pm)

Aug No Meeting

Sep 11 ASTRA Meeting (7pm – 10pm)

Oct 9 ASTRA Meeting (7pm – 10pm)

Nov 13 ASTRA Meeting (7pm – 10pm)

Dec 11 ASTRA Meeting (7pm – 10pm)



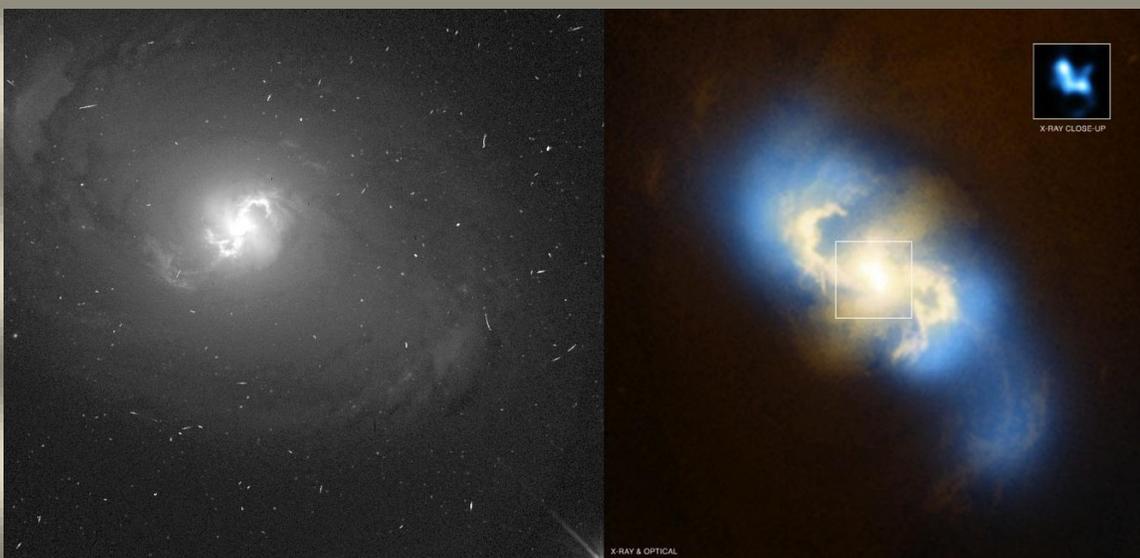
Minor mergers have massive consequences for black holes

By Dr. Ethan Siegel

When you think of our sun, the nearest star to our world, you think of an isolated entity, with more than four light years separating it from its next nearest neighbor. But it wasn't always so: billions of years ago, when our sun was first created, it very likely formed in concert with thousands of other stars, when a giant molecular cloud containing perhaps a million times the mass of our solar system collapsed. While the vast majority of stars that the universe forms—some ninety-five percent—are the mass of our sun or smaller, a rare but significant fraction are ultra-massive, containing tens or even hundreds of times the mass our star contains. When these stars run out of fuel in their cores, they explode in a fantastic Type II supernova, where the star's core collapses. In the most massive cases, this forms a black hole.

Over time, many generations of stars—and hence, many black holes—form, with the majority eventually migrating towards the centers of their host galaxies and merging together. Our own galaxy, the Milky Way, houses a supermassive black hole that weighs in at about four million solar masses, while our big sister, Andromeda, has one nearly twenty times as massive. But even relatively isolated galaxies didn't simply form from the monolithic collapse of an isolated clump of matter, but by hierarchical mergers of smaller galaxies over tremendous timescales. If galaxies with large amounts of stars all have black holes at their centers, then we should be able to see some fraction of Milky Way-sized galaxies with not just one, but *multiple* supermassive black holes at their center!

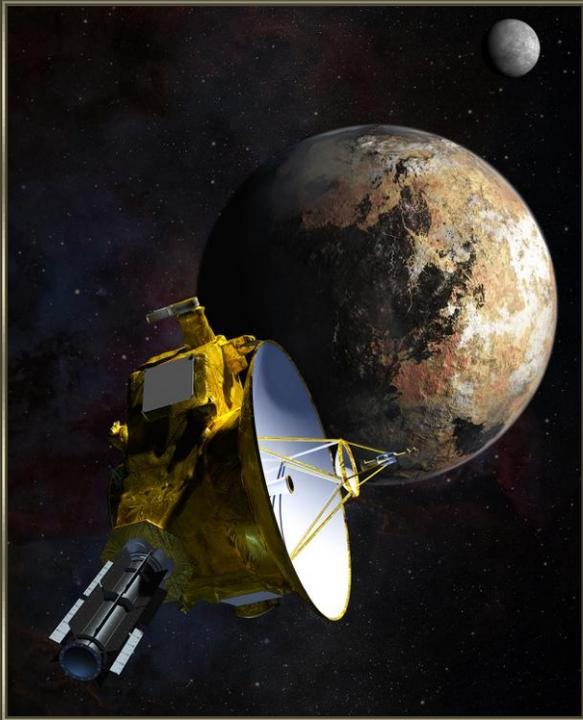
It was only in the early 2000s that NASA's Chandra X-ray Observatory was able to find the first binary supermassive black hole in a galaxy, and that was in an ultra-luminous galaxy with a double core. Many other examples were discovered since, but for a decade they were all in ultra-massive, active galaxies. That all changed in 2011, with the discovery of two active, massive black holes at the center of the regular spiral galaxy NGC 3393, a galaxy that must have undergone only minor mergers no less than a billion years ago, where the black hole pair is separated by only 490 light years! It's only in the cores of active, X-ray emitting galaxies that we can detect binary black holes like this. Examples like NGC 3393 and IC 4970 are not only confirming our picture of galaxy growth and formation, but are teaching us that supermassive relics from ancient, minor mergers might persist as standalone entities for longer than we ever thought!



Images credit: NGC 3393 in the optical (L) by M. Malkan (UCLA), HST, NASA (L); NGC 3393 in the X-ray and optical (R), composite by NASA / CXC / SAO / G. Fabbiano et al. (X-ray) and NASA/STScI (optical).

NASA Highlight

Information from www.nasa.gov/



NASA's New Horizons Spacecraft Begins First Stages of Pluto Encounter

NASA's New Horizons spacecraft recently began its long-awaited, historic encounter with Pluto. The spacecraft is entering the first of several approach phases that culminate July 14 with the first close-up flyby of the dwarf planet, 4.67 billion miles (7.5 billion kilometers) from Earth.

*Artist's concept of NASA's New Horizons spacecraft as it passes Pluto and Pluto's largest moon, Charon, in July 2015.
Image Credit:
NASA/JHU APL/SwRI/Steve Gribben*

Telescope To Seek Dust Where Other Earths May Lie

The NASA-funded Large Binocular Telescope Interferometer, or LBTI, has completed its first study of dust in the "habitable zone" around a star, opening a new door to finding planets like Earth. Dust is a natural byproduct of the planet-formation process, but too much of it can block our view of planets.

The findings will help in the design of future space missions that have the goal of taking pictures of planets similar to Earth, called exo-Earths.

*The Large Binocular Telescope at Mt. Graham, Arizona.
Image Credit:
Large Binocular Telescope Observatory*



CELESTIAL EVENTS FOR FEBRUARY 2015

Coordinated Universal Time (UTC)

February 3 - Full Moon 23:09 UTC

February 6 - Jupiter at Opposition

February 18 - New Moon 23:47 UTC

February 22 - Conjunction of Venus and Mars

Source: <http://www.seasky.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@astra-nj.org to announce it at a meeting. To advertise in our monthly newsletter please send all information to astra.newsletter@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 astra-wear@estitches.com. Order form is on the ASTRA website.

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

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)

**MARCH NEWSLETTER DEADLINE:
FEBRUARY 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@astra-nj.org or call him at 609-971-3331.



CLUB TELESCOPES (UPDATED)

After suitable training, club members may borrow these instruments for a month at a time. Please contact John Endreson at Telescope_Loan@astra-nj.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



ASTRA Membership Application Form

Thank you for your interest in the Astronomical Society of the Toms River Area. Please read carefully and fill in the appropriate information below.

New membership Annual dues are \$ 25.00 (January to December): (\$ _____)

Telescope Fund Assessment required for all new members (\$ 5.00)
"Optional for returning members"

Returning members Annual dues are \$ 25.00 from (January to December): (\$ _____)

Prorated membership dues are \$ 15.00 from (July to December): (\$ _____)

Astronomical League Membership dues are \$7:50 per year: (\$ _____)
"Ask about the benefits of becoming an AL member"

TOTAL AMOUNT PAID (as determined by the above schedule): (\$ _____)

PLEASE MAKE CHECKS PAYABLE TO ASTRA.

NAME _____ PHONE () _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Please provide your E-mail address so you can receive a copy of the "Astral Projections" Newsletter.
"If unable to provide an e-mail address, a paper copy of the newsletter will be mailed to you"

E-MAIL ADDRESS _____

I declare that to the best of my knowledge all particulars supplied by me are correct and complete.

APPLICANT SIGNATURE _____

Send this application form with your dues payment to:

**A.S.T.R.A. Robert J. Novins Planetarium
Ocean County College P.O. Box 2001
Toms River NJ 08754-2001**