



ASTRAL PROJECTIONS

DECEMBER 2015
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Upcoming Events

Monthly Meeting on Friday, December 11

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.

2016 Election & Awards (see page 6 for election ballot)

Following the business meeting there will be a presentation by Vic Palmieri titled "How to Collimate a Newtonian"

Star Party on Saturday, December 12

Join us as we set up our telescopes and observe the universe from 6:30pm to 8:30pm at Jakes Branch County Park, 1054 Sunset Road, Beachwood NJ

Winter Star Party on Saturday, December 19

Join us as we set up our telescopes and observe the universe from 7:00pm to 10:00pm 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

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

Recap

MONTHLY MEETING

The November 13th meeting began in the planetarium with a 32-minute show of Christmas songs and accompanying graphics.

Phil Zollner gave a fascinating presentation titled "Earth and Sky Photography." He shared with us pictures containing both celestial objects (moon, sun, stars, nebulae, planets) and features on the Earth (trees, buildings, lakes, etc.). Most of these pictures were his own. He also brought a camera and mount with him and explained the settings and art for this type of photography.

JAKES BRANCH STAR PARTY

The club had a very good public turnout on the night of November 14th at Jakes Branch. Thanks go to Vic Palmieri, who coordinated this event; Matt Crawford, who spent a lot of time helping someone set up and use her new 10-inch-aperture, truss Dobsonian reflector; and Bill Edelen, whose sign at the park entrance likely attracted dozens of people. This star party began with early visitors at about 06:00 pm and lasted until 9:00 pm.

NOVEMBER ISLAND BEACH STATE PARK STAR PARTY

The November 20th star party began at 5:15 pm and lasted until 7:40 pm under a waxing gibbous Moon (69% illuminated). Rich Huber did a perfect job as the coordinator. Rich and Matthew McCue set up their telescopes. Bill Martone also volunteered to help by bringing along a mounted camera that somehow could track and display images on an attached laptop! A new and delightful twist to what we could offer observers.

Some of the objects we looked at were the Moon, Albireo, the Double Double in Lyra, the Double Cluster in Perseus, the Andromeda Galaxy (M31), and the Pleiades open star cluster (M45) in Taurus. About fifteen people were entertained and informed by our efforts.

ASTRA IBSP SPECIAL USE PERMIT

ASTRA has acquired a special use permit for the rest of 2015 and is working on acquiring one for 2016 that allows its members to use Island Beach State Park from dusk until dawn for astronomical observations.

This "Special Use Permit" is to be used for Astronomical Observing only! It is not to be used to enter the park for any other reason. If you're interested in obtaining a copy of this permit along with the rules of use information, please contact John Endreson at: johnendreson@msn.com

2015 CALENDAR

- Dec 11** ASTRA Meeting (7pm – 10pm)
Awards, Election
Following the business meeting there will be a presentation by Vic Palmieri titled "How to Collimate a Newtonian"
- Dec 12** Star Party (6:30pm – 8:30pm)
Jakes Branch County Park
- Dec 19** Winter Star Party (7pm to 10pm)
Public Star Party at OCC Planetarium

CELESTIAL EVENTS

Coordinated Universal Time (UTC)

- December 7** Conjunction of the Moon and Venus.
- December 11** New Moon. Phase occurs at 10:29 UTC.
- December 13,14** Geminids Meteor Shower.
- December 22** December Solstice. The December solstice occurs at 04:48 UTC.
- December 22,23** Ursids Meteor Shower.
- December 25** Full Moon. Phase occurs at 11:11 UTC.
- December 29** - Mercury at Greatest Eastern Elongation.

Source: <http://www.seasky.org/>. Readers can Google "Sea and Sky" if they want to get to this site.



Our Solar System Is *Almost* Normal, But Not Quite

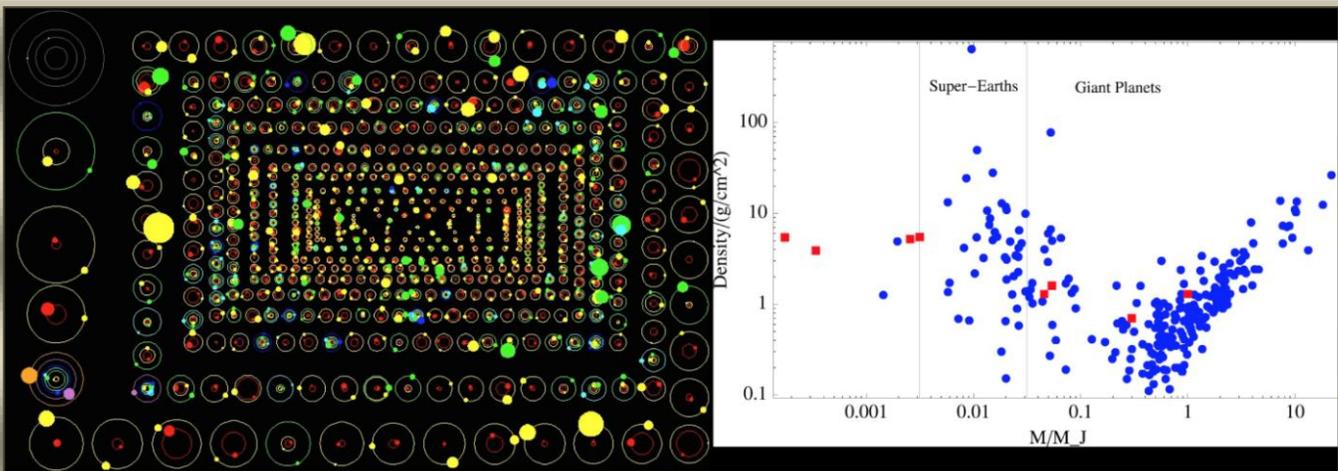
by Ethan Siegel

It was just over 20 years ago that the very first exoplanet was found and confirmed to be orbiting a star not so different from our own sun. Fast forward to the present day, and the stellar wobble method, wherein the gravitational tug of a planet perturbs a star's motion, has been surpassed in success by the transit method, wherein a planet transits across the disk of its parent star, blocking a portion of its light in a periodic fashion. Thanks to these methods and NASA's Kepler spacecraft, we've identified many thousands of candidate planets, with nearly 2,000 of them having been confirmed, and their masses and densities measured.

The gas giants found in our solar system actually turn out to be remarkably typical: Jupiter-mass planets are very common, with less-massive and more-massive giants both extremely common. Saturn—the least dense world in our solar system—is actually of a fairly typical density for a gas giant world. It turns out that there are many planets out there with Saturn's density or less. The rocky worlds are a little harder to quantify, because our methods and missions are much better at finding higher-mass planets than low-mass ones. Nevertheless, the lowest mass planets found are comparable to Earth and Venus, and range from just as dense to slightly less dense. We also find that we fall right into the middle of the "bell curve" for how old planetary systems are: we're definitely typical in that regard. But there are a few big surprises, which is to say there are three major ways our solar system is an outlier among the planets we've observed:

- All our solar system's planets are significantly farther out than the average distance for exoplanets around their stars. More than half of the planets we've discovered are closer to their star than Mercury is to ours, which might be a selection effect (closer planets are easier to find), but it might indicate a way our star is unusual: being devoid of very close-in planets.
- All eight of our solar system's planets' orbits are highly circular, with even the eccentric Mars and Mercury only having a few percent deviation from a perfect circle. But most exoplanets have significant eccentricities, which could indicate something unusual about us.
- And finally, one of the most common classes of exoplanet—a super-Earth or mini-Neptune, with 1.5-to-10 times the mass of Earth—is completely missing from our solar system.

Until we develop the technology to probe for lower-mass planets at even greater distances around other star systems, we won't truly know for certain how unusual we really are!



Images credit: NASA / Kepler Dan Fabricky (L), of a selection of the known Kepler exoplanets; Rebecca G. Martin and Mario Livio (2015) *ApJ* 810, 105 (R), of 287 confirmed exoplanets relative to our eight solar system planets.

NASA Highlight

Information from www.nasa.gov/

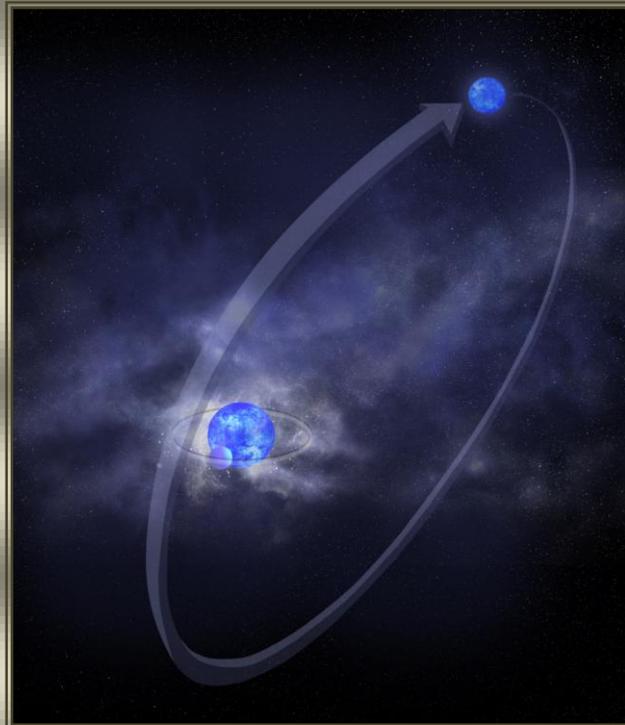
More Than Meets the Eye: Delta Orionis in Orion's Belt

One of the most recognizable constellations in the sky is Orion, the Hunter. Among Orion's best-known features is the "belt," consisting of three bright stars in a line, each of which can be seen without a telescope.

The westernmost star in Orion's belt is known officially as Delta Orionis. (Since it has been observed for centuries by sky-watchers around the world, it also goes by many other names in various cultures, like "Mintaka".) Modern astronomers know that Delta Orionis is not simply one single star, but rather it is a complex multiple star system.

Delta Orionis is a small stellar group with three components and five stars in total: Delta Ori A, Delta Ori B, and Delta Ori C. Both Delta Ori B and Delta Ori C are single stars and may give off small amounts of X-rays. Delta Ori A, on the other hand, has been detected as a strong X-ray source and is itself a triple star system as shown in the artist's illustration.

More information can be found at
<http://www.nasa.gov/topics/solarsystem/index.html>



This artist's illustration depicts the system of Delta Orionis A.
Credits: NASA/CXC/M.Weiss

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

ASTRA has several different types of telescopes, telescope mounts, along with binoculars, eyepieces, and eyepiece filters for members to borrow. If any member is interested please check out the website and contact John Endreson at telescope-loan@astra-nj.org or 609-971-3331

2016 A.S.T.R.A. MEMBERSHIP DUES ARE DUE

(PLEASE SEE MEMBERSHIP APPLICATION ON PAGE 5)

JANUARY NEWSLETTER DEADLINE:

DECEMBER 26, 2015



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**



The Astronomical Society of the Toms River Area

Elections Ballot for the 2016 Term

Election of officers shall take place at the December meeting.
Individual members shall have one vote. A plurality shall be sufficient to elect.

TERM OF OFFICERS

Office shall be effective on January 1 for a term of one year or until a successor is elected.
The officers of the organization shall be the President, the Vice President-Secretary, and the Treasurer.
The Officers shall be elected, and no person may hold more than one elected office concurrently.

a. The President shall be the primary point of contact for the organization, speak for the organization in all official matters and preside over all meetings.

b. The Vice President-Secretary shall:

- 1) Assume the responsibilities of the President in the President's absence.
- 2) Make a record of any formal actions taken by the organization.
- 3) Coordinate with the Newsletter Editor in mailing appropriate club business.
- 4) Perform as the ALCor (Astronomical League Correspondent). The ALCor communicates with the Astronomical League (AL) and periodically furnishes the AL with copies of our membership list.
- 5) Keep track of telescope equipment loans.
- 6) Keep the official version of the Bylaws and Policy documents.

c. The Treasurer shall be the club membership chairperson, shall maintain the club treasury, shall collect club dues, and shall expend funds as directed. Recurring expenditures normal to the operation of the organization are authorized. The Treasurer shall provide a written report of the year's expenditures, which shall be included in the Newsletter, published within the first calendar quarter. Separate accounting will be maintained for the Telescope Fund and it will not be used for general club operations without a vote at a regular meeting.

Please make your selections by circling the nominee of your choice, or fill in your name to self nominate.

Nominee for President: Matthew McCue

Nominee for Vice-President - Secretary: John Endreson

Nominee for Treasurer: Ro Spedaliere

Send this ballot to (or bring it to the December meeting):

A.S.T.R.A. 2016 Elections
Robert J. Novins Planetarium
Ocean County College P.O. Box 2001
Toms River NJ 08754-2001

or e-mail your vote to elections@astra-nj.org