



ASTRAL PROJECTIONS

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FEBRUARY MEETING: Rich Brady presented some of the top astronomical stories for 2013. There was a good discussion on many of the topics.

MARCH MEETING: Our next meeting is on 14 Mar and will be a "Swap Meet." Bob was not ready to do his Famous Astronomers presentation. ASTRA members can bring in their astronomy items that they no longer use and wish to trade or sell. If you need any items, this would be a good opportunity to get something.

Announcements

ASTRA DUES ARE PAST DUE: Membership application form is online. Members not paid up after March will not receive the newsletter.

MEMBERSHIP IN THE ASTRONOMICAL LEAGUE is separate and requires an additional dues payment of **\$7.50**. The Astronomical League Membership Form was sent with the January Newsletter and is available online.

What's up This Month?

SPRING STAR WATCH: Sat Mar 8 from 7 to 11 PM outside of the Planetarium at the college weather permitting.

JAKE'S BRANCH COUNTY PARK: Come join us under star filled skies to observe the Universe. Saturday, Mar 22, 2014, 6:00 PM - 8:00 PM. Location: Jakes Branch County Park, Double Trouble Rd, Beachwood, NJ 08722

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

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.



A Two-Toned Wonder from the Saturnian Outskirts

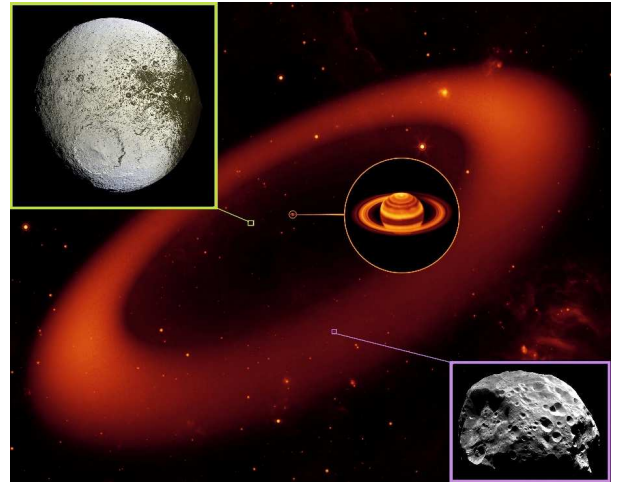
By Dr. Ethan Siegel

Although Saturn has been known as long as humans have been watching the night sky, it's only since the invention of the telescope that we've learned about the rings and moons of this giant, gaseous world. You might know that the largest of Saturn's moons is Titan, the second largest moon in the entire Solar System, discovered by Christiaan Huygens in 1655. It was just 16 years later, in 1671, that Giovanni Cassini (for whom the famed division in Saturn's rings—and the NASA mission now in orbit there—is named) discovered the second of Saturn's moons: Iapetus. Unlike Titan, Iapetus could only be seen when it was on the west side of Saturn, leading Cassini to correctly conclude that not only was Iapetus tidally locked to Saturn, but that its trailing hemisphere was intrinsically brighter than its darker, leading hemisphere. This has very much been confirmed in modern times!

In fact, the darkness of the leading side is comparable to coal, while the rest of Iapetus is as white as thick sea ice. Iapetus is the most distant of all of Saturn's large moons, with an average orbital distance of 3.5 million km, but the culprit of the mysterious dark side is *four times* as distant: Saturn's remote, captured moon, the dark, heavily cratered Phoebe!

Orbiting Saturn in retrograde, or the opposite direction to Saturn's rotation and most of its other Moons, Phoebe most probably originated in the Kuiper Belt, migrating inwards and eventually succumbing to gravitational capture. Due to its orbit, Phoebe is constantly bombarded by micrometeoroid-sized (and larger) objects, responsible for not only its dented and cavity-riddled surface, but also for a huge, diffuse ring of dust grains spanning *quadrillions* of cubic kilometers! The presence of the "Phoebe Ring" was only discovered in 2009, by NASA's infrared-sensitive Spitzer Space Telescope. As the Phoebe Ring's dust grains absorb and re-emit solar radiation, they spiral inwards towards Saturn, where they smash into Iapetus—orbiting in the opposite direction—like bugs on a highway windshield. Was the dark, leading edge of Iapetus due to it being plastered with material from Phoebe? Did those impacts erode the bright surface layer away, revealing a darker substrate?

In reality, the dark particles picked up by Iapetus aren't enough to explain the incredible brightness differences alone, but they absorb and retain *just enough* extra heat from the Sun during Iapetus' day to sublimate the ice around it, which resolidifies preferentially on the trailing side, lightening it even further. So it's not just a thin, dark layer from an alien moon that turns Iapetus dark; it's the fact that surface ice sublimates and can no longer reform atop the leading side that darkens it so severely over time. And that story—only confirmed by observations in the last few years—is the reason for the one-of-a-kind appearance of Saturn's incredible two-toned moon, Iapetus!



Images credit: Saturn & the Phoebe Ring (middle) - NASA / JPL-Caltech / Keck; Iapetus (top left) - NASA / JPL / Space Science Institute / Cassini Imaging Team; Phoebe (bottom right) - NASA / ESA / JPL / Space Science Institute / Cassini Imaging Team.

Learn more about Iapetus here:

<http://saturn.jpl.nasa.gov/science/moons/iapetus>.

Kids can learn more about Saturn's rings at NASA's Space Place:

<http://spaceplace.nasa.gov/saturn-rings>.

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



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CELESTIAL EVENTS FOR MARCH

Mercury is visible in the dawn sky – reaches greatest elongation W on 14th. Venus is visible in the SE in the dawn sky – reaches greatest elongation W on 22nd. Mars is in Virgo – rising mid-evening. Jupiter is in Gemini – high in the mid-evening sky. Saturn is visible in Libra rising near midnight. Highlights for the month:

- 1 New Moon
- 8 First Quarter Moon
- 9 Daylight Savings begins
- 10 Jupiter 5° N of Moon
- 16 Full Moon
- 18 Spica 1.7° S of Moon
- 19 Mars 3° N of Moon
- 20 Vernal Equinox
- 21 Saturn 0.2° N of Moon
- 24 Last Quarter Moon
- 27 Venus 4° S of Moon
- 29 Mercury 6° S of Moon
- 30 New Moon
- 31 Mars 5° N of Spica

Credit: 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.

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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.

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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).

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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 Spedaliere (Treasurer@astra-nj.org)

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FOR SALE: The following items are for sale. If anyone is interested see Rich Brady for contact information.

1. Celestron – Byers, 8 inch, f/10, FL = 2000 mm with worm gear drive (not a go to).
2. Wedge and Tripod (owner looking for interface,)
3. Questar 700 90mm, f/8 telephoto or telescope + adapter.
4. Celestron 8X50 finder.
5. Celestron visual back.
6. Eyepieces: 26 mm Celestron Plossl (1 ¼ in); 7 mm Celestron Ortho (1 ¼ in); 2 – 2X Celestron Barlows; 9 mm Nagler (1 ¼/2 in); 55 mm Televue Plossl (2 in); 40 mm Televue wide field (2 in).
7. Diagonals: 2 in, 1 ¼ in. 0.965 in
8. Tripod mount with 2 axis motion.

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EXECUTIVE BOARD

President – Rich Brady President@astra-nj.org
Vice President-Secretary – Sarah Waters, VP@astra-nj.org
Treasurer – Ro Spedaliere Treasurer@astra-nj.org
Newsletter Editor – Rich Brady Newsletter@astra-nj.org
Webmaster – Donald Durett Webmaster@astra-nj.org

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

