



ASTRAL PROJECTIONS

November 2011
Volume 22 Issue 11

Meeting Schedule

November 11th Meeting: "Open General Meeting"

Date: Friday, 11/11/2011

Time: 7:00 PM - 10:00 PM

Location: Robert J. Novins Planetarium, College Drive, Ocean County College, Toms River, NJ 08754

December 9th Meeting: "Election of Club officers & Year End Awards" Presented by Ro Spedaliere

Date: Friday, 12/9/2011

Time: 7:00 PM - 10:00 PM

Location: Robert J. Novins Planetarium, College Drive, Ocean County College, Toms River, NJ 08754



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CELESTIAL COMPASS OBSCURED BY URBAN LIGHT POLLUTION

Urban light pollution has been shown to reduce the visibility of not only the stars, but also of an important navigational signal for some nocturnal animals. During clear moonlit nights, a compass-like pattern of polarized light that is invisible to the human eye stretches across the sky. The nighttime skyglow over major cities renders this celestial compass unobservable over large areas, according to a new study written by a group of physicists and ecologists at Freie Universität Berlin and the Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB).

The report, which is currently in press in the *Journal of Geophysical Research*, cautions that screening of the celestial compass may reduce the evolutionary fitness of certain nocturnal animals, including species of beetles, moths, crickets, and spiders, possibly leading to disruption of food webs and affecting entire ecosystems.

"The visibility of the celestial compass is related to the degree of polarization of skylight," says the lead author of the study, Dr. Christopher Kyba, physicist at the Institute for Space Sciences of Freie Universität. "In a natural area with clean air, the degree of polarization of skylight is typically around 70-80%, and in Berlin aerosols reduce this to around 55%. We measured the sky polarization at night using a digital camera equipped with a linear polarizing filter, and found that inside the city light pollution reduced it further, to 11%," says Kyba. "Because light can travel so far in clear air, this depolarization effect extends far outside of cities. In a rural area outside of Berlin we found that the degree of polarization was still only 30%, even though the sky appeared dark to our eyes."

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Whats up this month?

November 2011

Celestial Events

2nd: First Quarter Moon (12:38
EDT)

3rd: Lunar Straight Wall
Visible (23:00 EDT).

5th: S Taurid Meteors (19:00
EDT)

6th: Daylight Saving Time
Ends

10th: Full Moon (15:16 EDT).

12th: N Taurid Meteors (17:00
EDT)

17th: Leonid Meteors (23:00
EDT)

18th: Last Quarter Moon
(10:09 EDT)

25th: New Moon (01:00 EDT)

ASTRA Public Outreach & Star Parties Schedule for November

Jakes Branch

Date: Saturday, 11/26/2011

Time: 5:30 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.**



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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)

Light Pollution

(Continued from Page 1)

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).

Newsletter: E-mail material (Meeting reports, Observing reports) to Newsletter@astra-nj.org

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



"The moonlit celestial compass is believed to be an important navigational signal for several species," says Dr. Franz Hölker, ecologist, study author, and leader of the research project "Verlust der Nacht" (Loss of the Night). "Nocturnal species of beetles, moths, crickets, and spiders are believed to navigate using the celestial compass. What our study shows is that the depolarizing effect of skyglow is a form of pollution with global reach." . The researchers emphasize that these preliminary measurements from Berlin likely underestimate the problem. "We performed these measurements on perfectly clear nights in the winter, when the full moon rises higher than it does in the summer," explains Kyba. "On typical summer nights when insects are likely to be active, we expect the celestial compass to be even more obscured. In addition, Berlin and its surroundings are darker than most comparatively sized world cities."

An unexpected result of the research was the discovery that urban skyglow can itself be polarized. "We expected the skyglow on moonless nights to be almost unpolarized, but instead found it have a 9% degree of polarization," remarks Kyba. "Our best guess is that street canyons channel the upward directed light into beams. If this is the case then the skyglow over grid cities in North America could be even more highly polarized."

The scientists do not address reduction of skyglow in the paper, but believe that it could be achieved without making city streets dark. "Much or most of the skyglow propagating large distances from the city is caused by lights that aren't pointed at the ground," says Kyba. "Municipalities that wish to reduce their skyglow can choose from a wide range of commercially available lamps that produce 0% uplight." He recommends that businesses, local governments, or citizens that seek assistance in modernizing their outdoor lighting get in contact with the International Dark Sky Association.

The research was funded by two interdisciplinary projects, MILIEU and Verlust der Nacht. The Verlust der Nacht project, funded by the German Ministry of Education and Research (BMBF), is specifically devoted to quantifying light pollution and investigating its impact on humans and the environment.

ASTRA Library of Books & DVD's

The following books and DVD's are available to borrow for one month at a time. Request for these items must be made prior to our regular meeting and returned the following meeting. Please e-mail your request for these items to John Endreson at President@astra-nj.org

BOOKS

1) **The National Air and Space Museum** Second Edition by C.D.B. Bryan

2) **Milestones of Aviation** Smithsonian Institution National Air and Space Museum

3) **New Atlas of the Moon** by Serge Brunier (Author), Thierry Legault (Photographer).

4) **Encyclopedia of space** by National Geographic

5) **The Real Mars** by Michael Hanion

DVD's

1) **Parts 1&2 Understanding the Universe What's New in Astronomy 2003** Taught by: Professor Alex Filippenko. Each part has 8 lectures, 45 minutes per lecture.

2) **Parts 1 to 5 Understanding the Universe An Introduction to Astronomy** Taught by: Professor Alex Filippenko each part has 8 lectures, 45 minutes per lecture.

3) **COSMOS**

In his "ship of the imagination," Carl Sagan guides us to the farthest reaches of space and takes us back into the history of scientific inquiry in the course of 13 fascinating hours.

For a complete list of books and DVD's, visit our website or e-mail John Endreson at President@astra-nj.org

Club Telescopes



A.S.T.R.A. owns four small telescopes

6-inch Dobsonian

8-inch Dobsonian

80mm Celestron Refractor

120mm EQ AstroView Refractor.

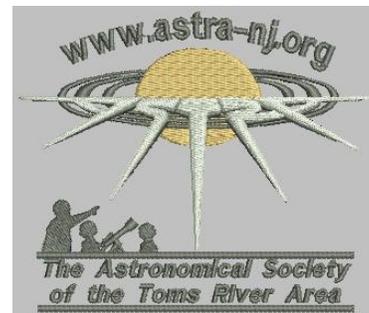
These telescopes are available for club members to borrow and use for a month or two at a time.

Wanted!

No longer used telescopes, Telescope parts, and accessories.

E-mail John Endreson at President@astra-nj.org
We will come and pick-up your used equipment.

ASTRA-WEAR: For Embroidered and/or Printed items With the ASTRA Logo



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