

Newsletter of the Baton Rouge Astronomical Society



April, 2015

Next Meeting: April 13th at 7PM at the HRPO



International Astronomy Day is April 25th. Check out the festivities at the HRPO. Click on image for more info.

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President's Message

Even though the weather didn't cooperate for the Hodges Gardens Star Party, it looks like we have some good Spring weather coming our way.

The Mid-South Star Gaze is Wednesday, April 15 to Saturday, April 18th in French Camp, MS, on the Natchez Trace northeast of Jackson, MS. It is on the grounds of the Rainwater Observatory and Planetarium. Unfortunately this event occurs on the same weekend as the Spring Scrimmage. (Registration for the Spring Scrimmage closes April 3rd.) Although Rainwater Observatory is on the edge of town, the skies are dark. The Star Gaze usually has fine speakers and interesting daytime activities. Plus the Rainwater staff handcrafted a very nice science park on the grounds. That stretch of road is a National Park and well patrolled. Be warned. If the speed limit sign says 50 MPH, it means EXACTLY 50 MPH. If the park police catch you going 51 MPH, you're getting a ticket!
<http://rainwaterobservatory.org/rainwater/index.cfm/information/upcoming-events/mid-south-star-gaze/>

BRAS has several public events this month. The biggest for us is Astronomy Day, 3:00 PM – 11:00 PM, Saturday, April 25th at the Observatory. This event always has a dozen or more exhibitors and activities, plus hundreds of attendees. This year, HRPO will raffle an Orion 4.5-inch Skyquest Dobsonian Reflecting Telescope. We will need people to help out throughout the event but no one is expected to stay more than a couple of hours. This is a big one for us and we normally pick up several new members during this event.

Other BRAS outreach events include:

Zippity Zoo Fest, April 12th

Family Camp Out, Zachary Community Park, stargazing, April 18th

Earth Day, April 19th

Also, we have an open invitation from the EBR Main Library to conduct some kind of teen astronomy class or session of your choice. Maybe June or July, but it's flexible.

Another school, Glasgow Middle School (1676 Glasgow Ave) is seeking an astronomy presentation for their BREC Youth 360 after school program. The program is from 2:30 to 5:00 Mon-Fri and runs through the end of May. Closer to 2:30 would be preferred. If you have a desire to share some kind of astronomical activity, class, workshop, or other, here are two opportunities. Let me know and I will put you in touch with the organizers.

As always, if you have a topic you would like to present for a future BRAS meeting activity, let me know.

Clear skies,

Merrill Hess



Catching stars that go *BANG!*

About once a century in any galaxy, a star spontaneously explodes—so brilliant that for a few days it can outshine all other stars in a small home galaxy. Although frequent by cosmic standards, supernovae are rare in human terms: since the invention of the telescope, none has been seen to explode in our Milky Way.

So how can astronomers study such catastrophic stellar suicides, especially the hours immediately after ignition?

Answer: Partner two automated telescopes with real-time supercomputing to monitor tens of thousands of galaxies every night, so that statistically there's a high chance of spotting a star exploding in some galaxy.

“Just since April 2009, we’ve discovered over 1,300 supernovae!” exclaimed Peter Nugent, senior staff scientist at Lawrence Berkeley National Laboratory and principal investigator of the Palomar Transient Factory (PTF) Type Ia supernova program (supernovae come in different types).

How it works

Atop Palomar Mountain, the Samuel Oschin telescope—a 48-inch (1.2-meter) Schmidt—acts as an automated wide-field survey camera, snapping sequential exposures of 8 square degrees across the night sky. Each minute or so, its sensitive CCD 101-megapixel sensor array records stars and galaxies as faint as 20th magnitude.

Each digital image is instantly beamed to the San Diego Supercomputing Center at the University of California, San Diego, and then 400+ miles north to the National Energy Research Scientific Computing Center (NERSC) at Lawrence Berkeley National Laboratory. Within minutes, supercomputers subtract each incoming image from reference images, comparing new sources of light to the Sloan Digital Sky Survey and other databases.

“We collect about 50 gigabytes of raw data per night,” Nugent says, “and typically discover about a million things that vary. The vast majority of them are ‘garbage’—known variable stars, asteroids, etc. But one or two per night are young supernovae!”

Coordinates of suspected supernovae are forwarded 500 miles back down to Palomar to a 60-inch photometric telescope for detailed brightness measurements that same night—and possibly also to 15 other telescopes around the world for spectroscopic observation.

Brilliant discovery

The PTF’s most spectacular find so far made newspaper headlines last summer: on August 24, 2011, a supernova (SN 2011fe) brightening in the Pinwheel Galaxy in Ursa Major only 21 million light-years away. The nearest and brightest Type Ia supernova to be spotted by the PTF, on September 10th, it peaked at visual magnitude 9.9.

In a paper published in *Nature* on December 15th, 2011, Nugent and coauthors conclude that SN 2011fe was a white dwarf star 1.4 times as massive as the sun, but only the diameter of Earth. It was stealing gas from a close sun-like companion until a runaway thermonuclear explosion ignited. Found only 11 hours (plus 21 million years!) after it exploded, it was the youngest supernova ever detected.

- *Trudy E. Bell, M.A.*

Further reading

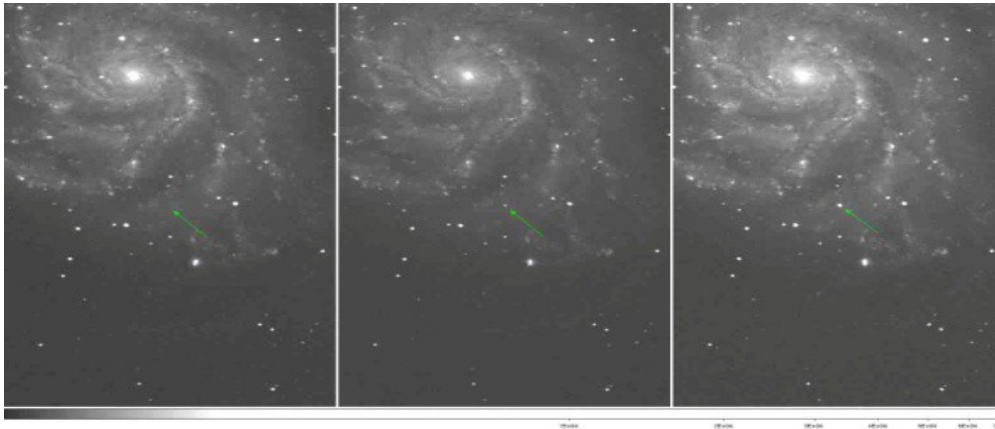
First scientific results from observations of SN 2011fe discovered by the Palomar Transient Factory appear in “Supernova 2011fe from an exploding carbon-oxygen white dwarf star,” by Peter Nugent *et*

al., *Nature* 480, 344–347 (15 December 2011); abstract is at <http://www.nature.com/nature/journal/v480/n7377/full/nature10644.html>; arXiv.org version of the entire paper can be downloaded from <http://arxiv.org/abs/1110.6201>.

The home page of the Palomar Transient Factory is <http://www.astro.caltech.edu/ptf/>.

The University of California High-Performance AstroComputing Center (UC-HIPACC), based at the University of California, Santa Cruz, is a consortium of nine University of California campuses and three Department of Energy laboratories (Lawrence Berkeley Laboratory, Lawrence Livermore Laboratory, and Los Alamos National Laboratory). UC-HiPACC fosters collaborations among researchers at the various sites by offering travel and other grants, co-sponsoring conferences, and drawing attention to the world-class resources for computational astronomy within the University of California system. More information appears at <http://hipacc.ucsc.edu>.

CAPTIONS:



The beautiful Pinwheel Galaxy in the constellation Ursa Major (the Big Dipper) is shown the night before supernova SN 2011fe exploded on August 22, 2011 (left), half a day after it exploded (middle) on August 23, and a day later (right) on August 24 (green arrows). The supernova reached maximum brightness on September 10, 2011, and then began fading. It was both the nearest and the youngest supernova discovered by the Palomar Transient Factory, being discovered only 11 hours after it detonated.



The Carver IBM iDataPlex supercomputer at NERSC at Lawrence Berkeley National Laboratory does much of the real-time analysis of images for the PTF, comparing digital images taken with the 48-inch Samuel Oschin telescope on Mount Palomar with reference images to identify supernovae. It found SN 2011fe.

Secretary's Summary of March Meeting

- The guest speaker for the evening was Ron Keating who spoke on the topic “Fighting Dew”. Mr. Keating is a member of PAS who owns a business that makes devices that evaporate dew. He outlined how dew gets created as well as different ways and devices to deal with it for different types of telescopes.
- Don Weinell reminded everyone that the Hodges Gardens Star Party was coming up in the following week.
- Merrill mentioned the new Astronomical League Sketcher Certificate. There are outreach opportunities coming up with the Zippity Zoofest on April 12th and Woodlawn Middle School on March 26th. BRAS is also signing up for the Dark Sky Network. The Maker Faire in September was noted also.
- Chris talked about International Astronomy Day coming up on April 25th. This year BREC Athletics will handle the Train-Like-an-Astronaut activity. He is looking for volunteers with solar telescopes to help out at this event. Most of the usual exhibitors (LIGO, Civil Air Patrol, etc.) will be there.
- Upcoming regional star parties were mentioned. Rainwater up in Mississippi will be going on at the same time as Spring Scrimmage at the Feliciana Retreat Center.
- Jim Gutierrez got up and spoke briefly on the movie The Theory of Everything which is about the physicist, Stephen Hawking. He had a transcript available for those that wanted it.
- The meeting ended with the monthly raffle. Wally Pursell had the winning ticket for the ETX90 telescope.

Roslyn Readinger *BRAS Secretary*



HRPO

FRIDAY NIGHT LECTURE SERIES

all start at 7:30pm

- 3 April: "Dating the Crucifixion"
- 10 April: "Apollo 13 45th Anniversary"
- 17 April: "Wonders of the Spring Sky"
- 24 April: {no lecture due to IAD preparations}

SCIENCE ACADEMY

Saturdays from 10am to 12pm

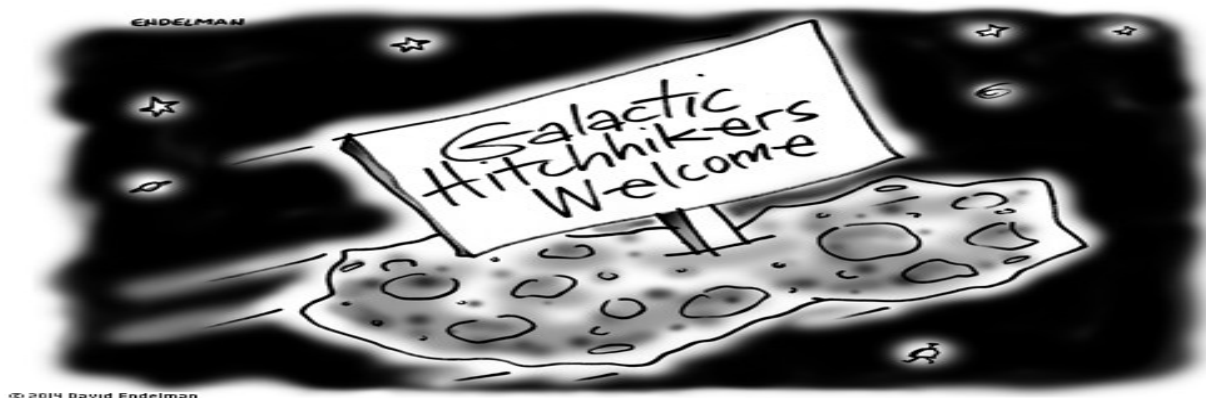
For ages eight to twelve. \$5/\$6 per child.

- 4 April: "Plate Tectonics"
- 11 April: "Expedition 8"
- 18 April: "Spring Day"
- 25 April: {no session due to IAD preparations}

CALL FOR VOLUNTEERS: [INTERNATIONAL ASTRONOMY DAY](#)

Saturday, 28 April from 3pm to 11pm. *Ten to twelve volunteers for two to six hours each.* Variety of tasks (telescope operation; stations; front desk; information desk.) Moderate; training provided.

Special Note Concerning the Above Event... This is the ninth annual IAD at HRPO. As seen above, both the lecture and the Science Academy session are canceled that weekend so the building and grounds can be transformed into the place needed for this event. That's how important it is! It is imperative that HRPO receives as many early volunteer confirmations and schedules as possible to allow this event to impress the taxpaying public as much as it can. Weather permitting, the estimated visitation for this year's IAD is between 700 and 800 people. Please consider volunteering at least two or three hours even if you've never been; you will receive step-by-step instructions when you arrive.



20/20 Vision Campaign

Light Pollution Committee: 13 April, 6:15pm at HRPO

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This Month's **GLOBE At Night** runs from 9 April to 18 April. Participants should use the constellation Leo.

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The SQM measurements obtained at HRPO back viewing pad from 18 January to 19 February have an average of 18.66. This suggests an increase of 0.002% in the light pollution above HRPO's domes. The March measurement has been delayed due to inclement weather during that month's New Moon period.

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The East Baton Rouge Parish Library has introduced its **five-year Strategic Plan** to the public and wants to receive input. One of the Plan's six goal areas is entitled "Facilities & Operations", which includes outside lighting. BRAS has already attended two public meetings concerning the Plan. According to Library Assistant Director Mary Stein, there will be more meetings in April.

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Two BRAS members are working toward the **Dark Sky Advocate** certificate. If either obtains it, BRAS will be the first astronomy club in the country with two holders of this certificate.

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On 10 March BRAS spoke with Debra Credeur, the Director of the **Atchafalaya Trace Commission**. A preliminary agreement was reached to plan a variety of astronomy outreach at various locations within the Atchafalaya National Heritage Area in conjunction with the 100th anniversary of the National Park Service. BRAS will take SQ measurements at the outreaches and thus plot the sky quality of a majority of the Area. Simultaneously, the ATC will look into the possible of including "skygazing" as an activity on the ANHA website.

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BRAS member Clint Gayle is investigating the possible of having a BRAS speaker at an upcoming meeting of the Zachary Rotary Club. This would be an excellent opportunity to discuss reduction of skyglow within Zachary city limits.

20/20 VISION CAMPAIGN CHECKLIST

All BRAS members need to perform these simple tasks during 2015.

____ Ask my community's Public Works Department to cap the streetlamp(s) nearest my home. [Record date and time of conversation, official on other end of line, and response.]

____ Thank at least one business/government entity per month for using capped outdoor lighting. [Record date, time and entity.]

____ Request at least once monthly that a business /government entity shield a security fixture that is sending light into the street. [Record date, time, entity and response.]

____ Take measurements for GLOBE at Night at each of these places:

- *personal residence
- *personal workplace
- *family member's school
- *friend's home
- *a campground
- *HRPO
- *LSU or SU or BRCC
- *BREC facility besides HRPO

[Follow instructions on [GLOBE at Night worksheet](#).]

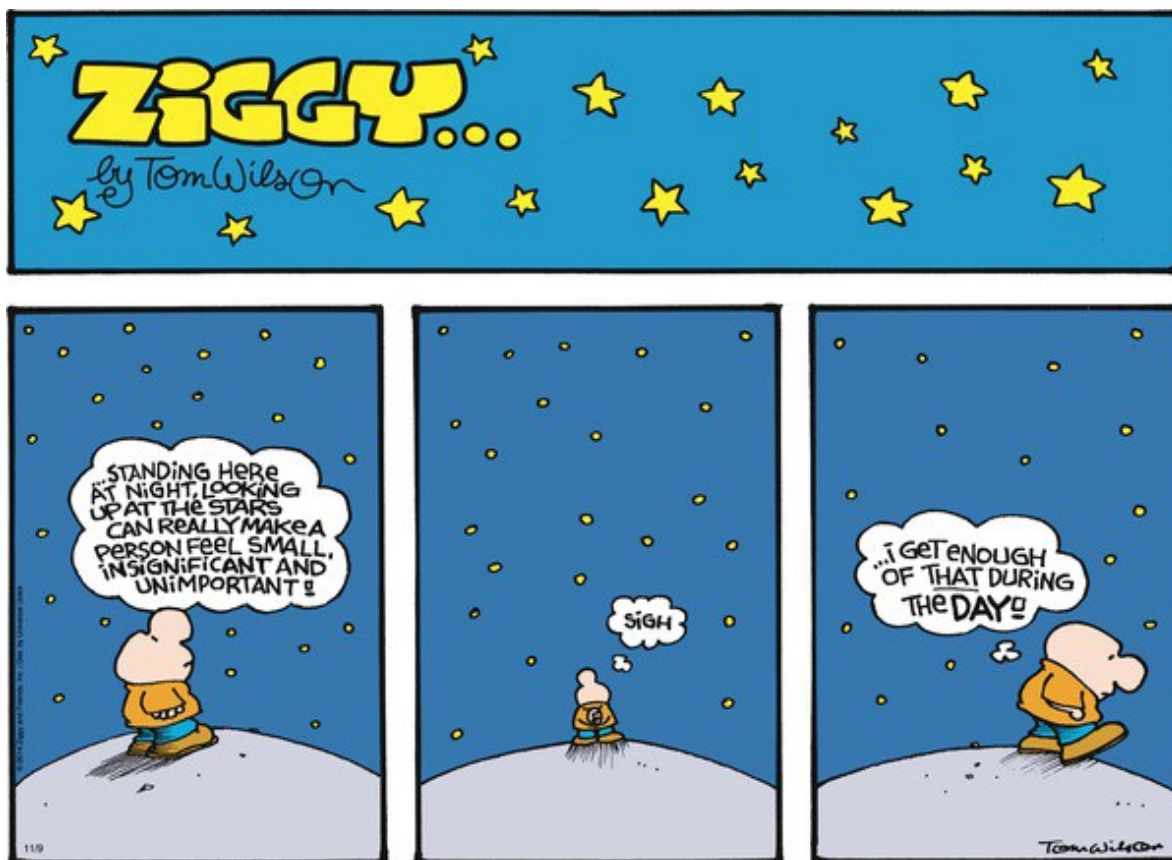
This Campaign will be successful only if a majority of BRAS members take part. To this point our dark sky concerns have received sympathetic responses from EBRP Public Works, Bluebonnet Swamp Nature Center and The Atchafalaya Trace Commission.

Recent Entries in the Forum

Below are selected recent additions to the BRAS Forum. There are also [nine active polls](#).

9th Annual [International Astronomy Day](#) is on 25 April
[NACA](#) (which became NASA) Has 100th Anniversary on 3 March
NASA-TV Broadcasts Portion of [U.S. Senate Youth Program](#)
HRPO has [Pi-Day](#)-themed Plus Night on 14 March
BRAS Member Chris Desselles Gives Talk to [B.R. Photgraphic Society](#)
Sadly, [2015 Hodges Gardens Star Party](#) is Total Bust Due to Weather
April Viewing Times for the [Great Red Spot](#) Now Posted
[Expedition 42](#) Concludes with Landing on 11 March
Scott Kelly and Mikhail Kornienko Begin a [One-Year Mission](#) on the ISS
[Total Eclipse of Moon](#) on 4 April
One of [Longest Filaments Ever Witnessed](#) Appears on Sun 9 February
[Asteroid 2015 FC](#) Passes Earth by Comfortable Margin on 26 March
Short Film [LIGO Generations](#) Premieres
[NanoDays](#) Celebrated for Sixth Year at HRPO

Baton Rouge Culmination Times Posted for [M100](#).



INTERNATIONAL ASTRONOMY DAY

Saturday, 25 April from 3pm to 11pm

Volunteers needed!

RAFFLE TICKETS, \$5 EACH

First Prize: Orion Skyquest XT4.5 Classic Dobsonian Telescope

Value: \$267.99

SOME RETURNING EXHIBITORS...

Baton Rouge Amateur Radio Club

Baton Rouge Metropolitan Airport

Baton Rouge Zoo

Bluebonnet Swamp Nature Center

LIGO

RIDES

18" Dry Slide

Spacewalk

Trackless Train

OTHER

Adventure Quest

Face Painting

Homemade Comet

Scope-on-a-Rope

Train Like an Astronaut

Early volunteer sign-up is needed. It is extremely difficult to schedule a volunteer if that person reveals his availability with only two or three days to go. Sign-up now, please!