



Monthly Notices of the Everglades Astronomical Society



Naples, FL
July 2014

Officers: President: Todd Strackbein (tstrackbein@gmail.com); **VP/Secretary:** Denise Sabatini (dsabatini2@embarqmail.com);
Treasurer: Bob Gurnitz; **Newsletter Editor:** Jackie Richards (jmrichards2005@yahoo.com)
Home Page: <http://naples.net/clubs/eas> **Webmaster:** Martin Zombeck (mvz@alum.mit.edu)
Fak Coordinator & information on viewing: Charlie Paul (cpaul651@earthlink.net) 410-8192
Mailing Address: P. O. Box 1868, Marco Island, FL 34146

President's Message

This Tuesday is our first summer casual meeting at Second Cup in the Mercato Shops.

<http://www.mercatoshops.com/store/second-cup/2137049176/2138839717>.

We will return to the Norris Center in September. The weather has been rough these past weeks with the tropical patterns fully upon us and Saturn tracking a bit low in the southern sky this year. It definitely takes a bit more determination but well worth seeing what our summer skies have to offer. Watch your emails to see if any events get scheduled in the coming weeks where help is needed.

Clear skies and enjoy your summer.

President Todd Strackbein

Dates for the "Fak"

Usually the best times to go out to the Fakahatchee Strand viewing site are moonless nights. Below is a list of upcoming Saturday nights that you will often find fellow club members out there enjoying the skies with you (weather permitting).

Date	Moonrise	Moonsset
June 19	12:04 a.m.	1:15 p.m.
June 26	5:35 a.m.	7:00 p.m.

Sky Events

July 5 - First quarter
July 12 - Full moon
July 18 - Last quarter
July 26 - New Moon
July 28 - Delta Aquarids meteor shower peak (up to 20 meteors per hour)

Next Meeting

July 8, 2014: Time 7:00 – 9:00 pm
Second Cup (@ Mercato)
9115 Strada Place

Nutwood Observatory

By Jackie Richards

While many amateur astronomers will head south during the winter to attend the Winter Star Party, you might want to travel north during the summer to the Nutwood Observatory in Canada. The below picture of the Pinwheel galaxy was taken by club member, Brian McGaffney, at the Nutwood Observatory last month. In case you missed it, Brian gave a presentation at our March meeting during which he shared information about the Nutwood Observatory as well as the amazing photos taken from there.



Pinwheel Galaxy (M101 or NGC 5457) by Brian McGaffney taken at the Nutwood Observatory in Ontario, Canada; taken with 17" truss scope using an unbinned U16M ccd chip camera; filters were Astrodon filters including HA and regular sets; total acquisition was about 14 hours over five nights in June; guiding and tracking done with an 80 mm Borg with Galactic star shoot guider; image acquisition was done remotely with MaxIm, Pixinsight along with various PS C5 fits plug ins; final processing with PS CS5.

The Observatory is open to the public from May 1 through October 30. It is located on a private 2,000 acre park land. The property has been designated as a “dark sky region,” is at an elevation of 2,400 feet and has a 360 degree field of view of the sky. It’s located in Central Ontario, Canada, in the County of Hastings about 15 kilometers south of the small town of Bancroft which has been declared a “dark sky preserve.” Tours and camping are available. To see more information, photos and directions, go to www.nutwood-observatory.com.

* * *

Fak & Other Photos



Omega Nebula (M8 or NCG 6523) Photo by Rick Piper and Jackie Richards at the Fak (June 2014); Orion 80 mm Refractor f5, German Equatorial Mount (GEM), Canon XSi; one at 10 minutes.

* * *



A Glorious Gravitational Lens

By Dr. Ethan Siegel

As we look at the universe on larger and larger scales, from stars to galaxies to groups to the largest galaxy clusters, we become able to perceive objects that are significantly farther away. But as we consider these larger classes of objects, they don't merely emit increased amounts of light, but they *also* contain increased amounts of **mass**. Under the best of circumstances, these gravitational clumps can open up a window to the distant universe well beyond what any astronomer could hope to see otherwise.



Abell 2218. Image credit: NASA, ESA, and Johan Richard (Caltech). Acknowledgement: Davide de Martin & James Long (ESA/Hubble).

The oldest style of telescope is the refractor, where light from an arbitrarily distant source is passed through a converging lens. The incoming light rays—initially spread over a large area—are brought together at a point on the opposite side of the lens, with light rays from significantly closer sources bent in characteristic ways as well. While the universe doesn't consist of large optical lenses, **mass itself** is capable of bending light in accord with Einstein's theory of General Relativity, and acts as a *gravitational lens*!

The first prediction that real-life galaxy clusters would behave as such lenses came from Fritz Zwicky in 1937. These foreground masses would lead to multiple images and distorted arcs of the same lensed background object, all of which would be magnified as well. It wasn't until 1979, however, that this process was confirmed with the observation of the Twin Quasar: QSO 0957+561. Gravitational lensing requires a serendipitous alignment of a massive foreground galaxy cluster with a background galaxy (or cluster) in the right location to be seen by an observer at our location, but the universe is kind enough to provide us with many such examples of this good fortune, including one accessible to astrophotographers with 11" scopes and larger: Abell 2218.

Located in the Constellation of Draco at position (J2000): R.A. 16h 35m 54s, Dec. +66° 13' 00" (about 2° North of the star 18 Draconis), Abell 2218 is an extremely massive cluster of about 10,000 galaxies located 2 billion light years away, but it's *also* located quite close to the zenith for northern hemisphere observers, making it a great target for deep-sky astrophotography. Multiple images and sweeping arcs abound between magnitudes 17 and 20, and include galaxies at a variety of redshifts ranging from $z=0.7$ all the way up to $z=2.5$, with farther ones at even fainter magnitudes unveiled by Hubble. For those looking for an astronomical challenge this summer, take a shot at Abell 2218, a cluster responsible for perhaps the most glorious gravitational lens visible from Earth!

EAS 2014 DUES

Learn about current efforts to study gravitational lensing using NASA facilities:
<http://www.nasa.gov/press/2014/january/nasas-fermi-makes-first-gamma-ray-study-of-a-gravitational-lens/>

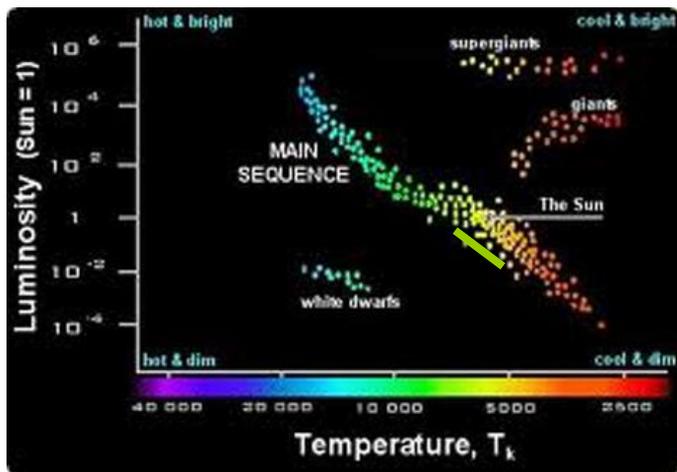
Kids can learn about gravity at NASA's Space Place:
<http://spaceplace.nasa.gov/what-is-gravity/>

* * *

Corrections for June 2014 Newsletter

In Dennis Albright's article:

Page 3, Figure 2 H-R Diagram



Page 4, Column 1, Line 24:

$$P_{\text{LifeTot}} = P_{\text{LifeS1}} + P_{\text{LifeS2}} + P_{\text{LifeS3}} + \dots + P_{\text{LifeS425}}$$

Page 4, Column 1, Line 48:

$$N_{\text{EL0}} - 2s \leq N_{\text{EL}} \leq N_{\text{EL0}} + 2s$$

Page 4, Column 2, Line 9:

$$f_{\text{LifeP}} = P_{\text{LifeSP}} / P_{\text{LifeS}} = 0.518$$

* * *

Items For Sale or Trade or Wanted:

http://www.naples.net/clubs/eas/equipment_sales.html

Useful links (software, telescope making, telescope and equipment suppliers, astronomical data sources, iPhone and iPad Apps and more):

<http://www.naples.net/clubs/eas/links.html>

* * *

For the bargain price of only \$20.00 per family, all this can be yours this year:

- Meet with your fellow astronomy enthusiasts at least 10 times a year;
- Learn about astronomy and telescopes. Check out our club scope;
- Many opportunities to view planets, nebulae and other celestial objects (even if you don't have your own telescope); and
- Enjoy the many astronomy programs at our regular monthly meetings.

Don't miss out! Fill out this form (please print clearly) and send it with your \$20 check to the Everglades Astronomical Society, P. O. Box 1868, Marco Island, Florida, 34146.

Name:

Address:

Phone:

Email:
