



Monthly Notices of the Everglades Astronomical Society



Naples, FL
August 2017

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President's Message

We had a small group of members show up for our coffee meeting in July. If you guessed that the main topic of conversation was the August total eclipse, you'd be right. For sure, the anticipation for this event is growing. I hope by now you not only decided to go to the path of totality, but you also have your accommodations set. Regardless of where you are for this event, I truly wish you (and me) clear skies.

Hopefully some of you have been able to get some observing in. Although I haven't gotten much in, I was able to show Jupiter and Saturn to some very anxious people. It was a challenge, but they left satisfied. Last night (July 21st), I was able to see the summer triangle for the first time in a long time. It was exciting.

If you are around in August, please join us at the Second Cup. Clear skies, Denise Sabatini

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	Moonset
August 12	10:33 p.m.	10:25 a.m.
August 19	3:42 a.m.	5:27 p.m.

Sky Events

- August 7 - Full Moon
- August 12/13 - Perseid Meteor Shower
- August 14 - Last Quarter
- August 21 - New Moon
- August 21 - Solar Eclipse
- August 29 - First Quarter

Next Meeting

August 8, 2017: Time 7:00 – 9:00 pm
Second Cup at Mercato

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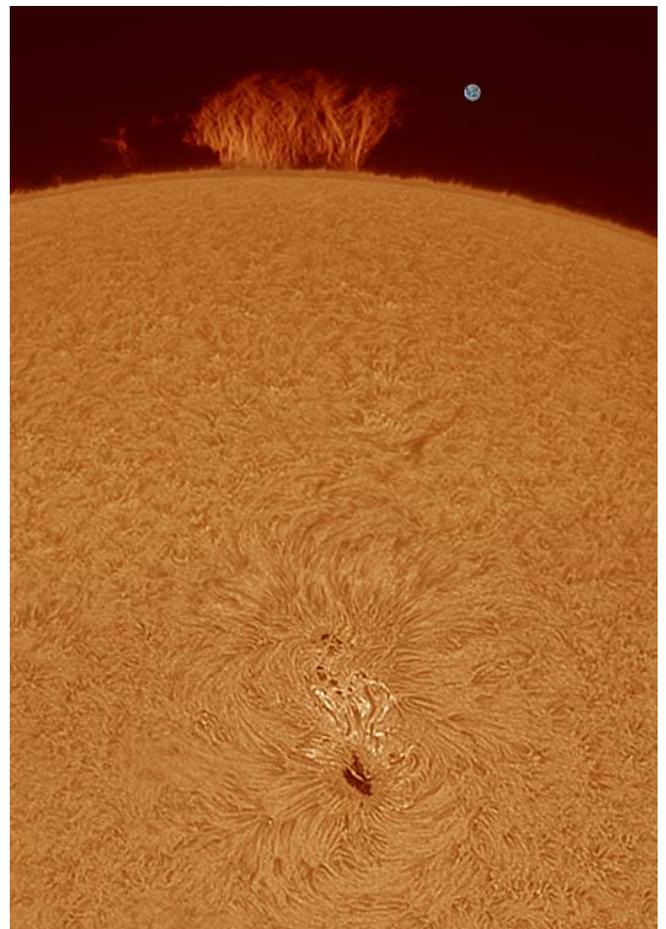


Photo of the sun by Chuck Pavlick taken on July 9, 2017. Notice the Earth in the top right for indication of how many Earths will fit in the area of the prominence.



NGC 7565 (Bubble Nebula) photo by Armando Merlo.



M17 (Swan Nebula) taken by Chuck Pavlick on 7/24/17. Scope: William Optics FLT 110 f/7; Camera: Starlight Xpress SX 25c w/Orion Skyglow filter; captured in Nebulosity and processed in Pixinsight and Photoshop; 10 @ 300 seconds.

ECLIPSE 2017 CHECKLIST (Contributed by Denise Sabatini)

If you will be viewing the *total* eclipse, here are some things to watch for:

- First contact
- Sharp shadows (pinhole crescents)
- Venus
- Approaching shadow
- Bailey's Beads
- 1st Diamond Ring
- Chromosphere & prominences (east)
- Corona details
- Bright stars and planets
- 360 degree sunset glow
- Chromosphere & prominences (west)
- 2nd Diamond ring and Bailey's Beads
- Fourth contact – End

Sky News (July/August 2017) "How to view the total eclipse"

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Interactive Site for best solar eclipse locations Contributed by Bart Thomas

http://xjubier.free.fr/en/site_pages/solar_eclipses/TSE_2017_GoogleMapFull.html?Lat=33.6647&Lng=-80.7789&Zoom=9&Map='ROADMAP'&OMap=0

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LETTER FROM EAS MEMBER, BART THOMAS

EAS Members,

After teaching science at Naples High for 33 years, I have decided to transfer to Beacon High School in Naples. I have been working with this alternative education program throughout summer school and will be teaching online science classes to students needing to make up high school credits. The school enrollment is small, the atmosphere friendly, which lends itself to a great learning environment for students.

I have been the only Astronomy teacher in Collier County Public Schools since 2003 and have spent a considerable amount of time developing and implementing the course curriculum. I always thought the best part of the student experience was looking through the telescope. Students were given multiple opportunities each year to participate in viewings on and off campus.

I really appreciate the help I've received from EAS members with a few of the public astronomical events; specifically, at Lowdermilk Park (2005 partial solar eclipse and 2012 transit of Venus), the Cambier Parking Garage (2013 partial solar eclipse) and the most recent 2016 Transit of Mercury event. When I have asked for help in any way, club members have always responded enthusiastically. Thank you.

There have been a lot of highlights throughout my teaching career thus far; however, starting and teaching the NHS Astronomy class has provided me many opportunities and I believe has extended my career. All I can say now is that, "I have learned a lot but still know very little".

I have left NHS with 1800 eclipse glasses purchased through a Champions of Learning grant I received for all Naples High students, faculty, and other staff members. Hopefully there will be some sun in Naples for them to view the partial eclipse during the last period of the day. As for me, I will be at Wild Dunes Resort in Isle of Palm just outside Charleston, SC. I will be doing a pre-eclipse presentation at the resort along with setting up all my projection equipment. I really hope to capture a great image in the monster solar projector.

I thought it important to let everyone know of my career change. Hope you enjoy the rest of the summer.

Bart Thomas

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REQUESTS FOR EAS VOLUNTEERS

We have received two requests for volunteers from the EAS to assist as follows:

One of Bart Thomas' previous Naples High School students is working to get her Gold Award. As an Ambassador Girl Scout, she is conducting a workshop for young girls to pursue passions and careers in fields they otherwise would not be interested in. She would like a few EAS volunteers to come to her workshop on September 2nd from 10:00 a.m. to 12 noon and set up their telescopes to look at the sun and to explain some topics on astronomy.

The second request we received is from the youth librarian at the Naples Regional Library. She is looking for EAS volunteers to assist on eclipse day, August 21st from 3:00 – 5:00. They are looking for volunteers to answer questions and get students excited about space and science in general. Many club members will be away that week for the eclipse but the club would like to assist with this event, if possible.

If you are interested in volunteering for either of these two events, please contact Denise Sabatini or Charlie Paul.

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Published Articles by EAS Members

Ted Wolfe's article in the Naples News/Collier Citizen on July 25, 2017: Looking Up: The comet impostor is puzzling to astronomers.

<http://www.naplesnews.com/story/news/local/communities/collier-citizen/2017/07/25/looking-up-giant-comet-impostor-puzzling-astronomers/508470001/>

TO VIEW THE ABOVE ARTICLE, PRESS "CTRL" AND LEFT CLICK BUTTON.

The below link provides previous articles in the Collier Citizen by Ted Wolfe that appeared over past years.

<http://www.naplesnews.com/search/Ted%20Wolfe/>

To view all of Ted Wolfe's photos, visit his website @ www.tedwolfe.com.

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Stellar Cores – Part 1 – Core Size

By Dennis C. Albright

For stars other than stellar remnants like white dwarfs, neutron stars and black holes or very small stars like brown dwarfs, energy must be generated in order to keep the star from collapsing due to gravity. Fusion of nuclei at the center of the star provides this energy. The stellar core is where the heaviest nuclei fuse to provide this energy. At the end of the star's life after it explodes in a nova or supernova, the stellar core becomes either a white dwarf, a neutron star or a black hole. The STARS DAW code calculates the type of nuclear reactions occurring in the star. This is shown in Table 1.

Table 1 – Nuclear Reactions

Star	L_s (suns)	Type of Star	Nuclear Reactions
Sun	1.00	Main Sequence	$4H^1 \rightarrow He^4 + 2e^+$
Thuban	300.00	Giant	$3He^4 \rightarrow C^{12}$
Alphard	780.00	Bright Giant	$3He^4 \rightarrow C^{12}$
Rigel	117400.00	Bright Super Giant	$Si^{28} + Si^{28} \rightarrow Fe^{56} + 2e^+$

Core Properties

The STARS DAW code calculates the core mass, M_{Core} . The results of the calculations for these 4 relatively well-known stars are shown in Table 2. The type of star and the stellar mass, M_s , are also indicated in this table. The core mass, M_{Core} , as a function of both the luminosity class and stellar mass, M_s , for approximately 500 stars is shown in Figure 1. The core radius, R_{Core} , as a function of both the luminosity class and stellar mass, M_s , for approximately 500 stars is shown in Figure 2.

Table 2 – Core Properties

Star	Type of Star	M_s (suns)	R_s (suns)	M_{Core} (suns)	R_{core} (suns)
Sun	Main Sequence Dwarf	1.00	1.00	0.278	0.2250
Thuban	Giant	3.85	6.75	0.412	0.3440
Alphard	Bright Giant	3.03	0.50	0.373	0.4389
Rigel	Bright Super Giant	18.00	74.00	1.150	0.4451

Figure 1 Core Mass, M_{Core} , vs the Stellar Mass, M_{S}

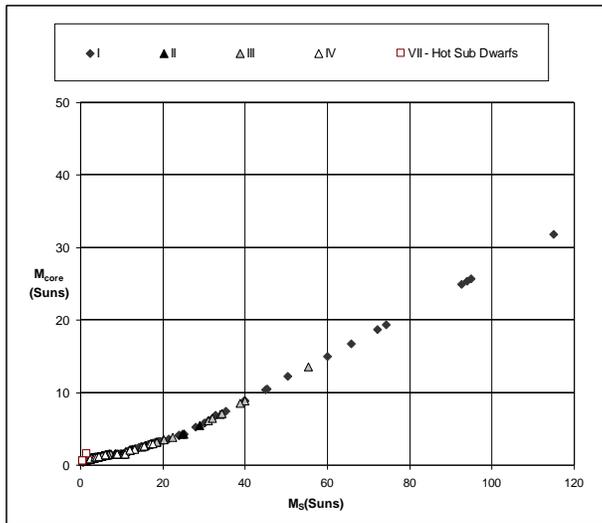
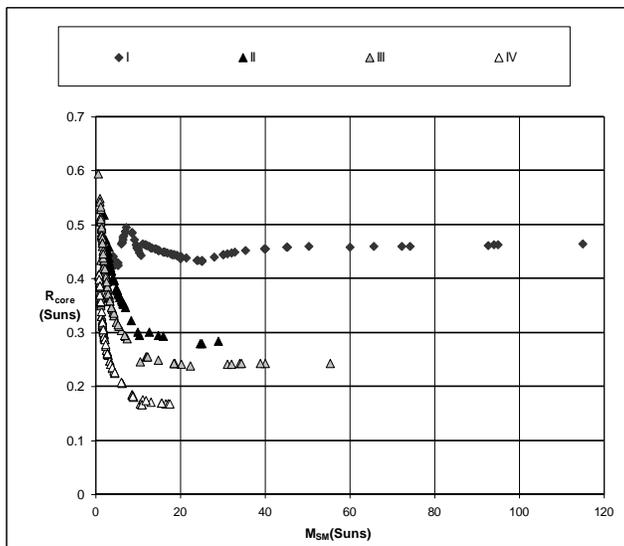


Figure 2 – Core Radius, R_{core} , vs the Stellar Mass, M_{S}



References

1. EAS Newsletter February 2017, STARSDAW: A Program to Model and Simulate Stars, Dennis Albright



Twenty Years Ago on Mars... By Linda Hermans-Killiam

On July 4, 1997, NASA's Mars Pathfinder landed on the surface of Mars. It landed in an ancient flood plain that is now dry and covered with rocks. Pathfinder's mission was to study the Martian climate, atmosphere and geology. At the same time, the mission was also testing lots of new technologies.

For example, the Pathfinder mission tried a brand-new way of landing on Mars. After speeding into the Martian atmosphere, Pathfinder used a parachute to slow down and drift toward the surface of the Red Planet. Before landing, Pathfinder inflated huge airbags around itself. The spacecraft released its parachute and dropped to the ground, bouncing on its airbags about 15 times. After Pathfinder came to a stop, the airbags deflated.

Before Pathfinder, spacecraft had to use lots of fuel to slow down for a safe landing on another planet. Pathfinder's airbags allowed engineers to use and store less fuel for the landing. This made the mission less expensive. After seeing the successful Pathfinder landing, future missions used this airbag technique, too!

Pathfinder had two parts: a lander that stayed in one place, and a wheeled rover that could move around. The Pathfinder lander had special instruments to study Martian weather. These instruments measured air temperature, pressure and winds. The measurements helped us better understand the climate of Mars.



Caption: The Mars Pathfinder lander took this photo of its small rover, called Sojourner. Here, Sojourner is investigating a rock on Mars. Image credit: NASA/JPL-Caltech

The lander also had a camera for taking images of the Martian landscape. The lander sent back more than 16,000 pictures of Mars. Its last signal was sent to Earth on Sept. 27, 1997. The Pathfinder lander was renamed the Carl Sagan Memorial Station. Carl Sagan was a well-known astronomer and science educator.

Pathfinder also carried the very first rover to Mars. This remotely-controlled rover was about the size of a microwave oven and was called Sojourner. It was named to honor Sojourner Truth, who fought for African-American and women's rights. Two days after Pathfinder landed, Sojourner rolled onto the surface of Mars. Sojourner gathered data on Martian rocks and soil. The rover also carried cameras. In the three months that Sojourner operated on Mars, the rover took more than 550 photos!

Pathfinder helped us learn how to better design missions to Mars. It gave us valuable new information on the Martian climate and surface. Together, these things helped lay the groundwork for future missions to Mars.

Learn more about the Sojourner rover at the NASA Space Place: <https://spaceplace.nasa.gov/mars-sojourner>

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EAS 2017 DUES

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 1451,
Marco Island, Florida, 34146.

Name: _____

Address: _____

Phone: _____

Email: _____