

SPECTRUM

Northern Cross Science Foundation Newsletter

September, 2018

Looking Up

September 6, Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

Business Meeting Follow

September 8, Saturday

Community Campfire

6:00 p.m.—10:00 p.m.

Pike Lake Campground

September 20, Thursday

Board Meeting

7:30 p.m.

House of Jeff Setzer

September 27, Thursday

NCRAL 2020 Meeting

No Meeting in September

September 28, Friday

Public Viewing

7:00 p.m.-11:00 p.m.

Harrington Beach State Park

September 29, Saturday

Fall Harvest Hike

7:00 p.m.-11:00 p.m.

Harrington Beach State Park

September 29, Saturday

Public Viewing

7:00 p.m. -11:00 p.m.

Pike Lake Campground

October 4, Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

Business Meeting to Follow

Parker Solar Probe: Humanity's First Visit to a Star NASA

NASA's historic Parker Solar Probe mission will revolutionize our understanding of the Sun, where changing conditions can propagate out into the solar system, affecting Earth and other worlds. Parker Solar Probe will travel through the Sun's atmosphere, closer to the surface than any spacecraft before it, facing brutal heat and radiation conditions — and ultimately providing humanity with the closest-ever observations of a star.



Journey to the Sun

Launch: Aug. 12, 2018

Launch Site: Cape Canaveral Air Force Station, Florida

Launch Vehicle: Delta IV-Heavy with Upper Stage

In order to unlock the mysteries of the Sun's atmosphere, Parker Solar Probe will use Venus' gravity during seven flybys over nearly seven years to gradually bring its orbit closer to the Sun. The spacecraft will fly through the Sun's atmosphere as close as 3.8 million miles to our star's surface, well within the orbit of Mercury and more than seven times closer than any spacecraft has come before. (Earth's average distance to the Sun is 93 million miles.)

Flying into the outermost part of the Sun's atmosphere, known as the corona, for the first time, Parker Solar Probe will employ a combination of in situ measurements and imaging to revolutionize our understanding of the corona and expand our knowledge of the origin and evolution of the solar wind. It will also make critical contributions to our ability to forecast changes in Earth's space environment that affect life and technology on Earth.

Extreme Exploration

At closest approach, Parker Solar Probe hurtles around the Sun at approximately 430,000 mph (700,000 kph). That's fast enough to get from Phila-

delphia to Washington, D.C., in one second.

At closest approach to the Sun, the front of Parker Solar Probe's solar shield faces temperatures approaching 2,500 F (1,377 C). The spacecraft's payload will be near room temperature.

On the final three orbits, Parker Solar Probe flies to within 3.8 million miles of the Sun's surface — more than seven times closer than the current record-holder for a close solar pass, the Helios 2 spacecraft, which came within 27 million miles in 1976, and about a tenth as close as Mercury, which is, on average, about 36 million miles from the Sun.

Parker Solar Probe will perform its scientific investigations in a hazardous region of intense heat and solar radiation. The spacecraft will fly close enough to the Sun to watch the solar wind speed up from subsonic to supersonic, and it will fly through the birthplace of the highest-energy solar particles.

To perform these unprecedented investigations, the spacecraft and instruments will be protected from the Sun's heat by a 4.5-inch-thick (11.43 cm) carbon-composite shield, which will need to withstand temperatures outside the spacecraft that reach nearly 2,500 F (1,377 C).

The Science of the Sun

The primary science goals for the mission are to trace how energy and heat move through the solar corona and to explore what accelerates the solar wind as well as solar energetic particles. Scientists have sought these answers for more than 60 years, but the investigation requires sending a probe right through the 2,500 degrees Fahrenheit heat of the corona. Today, this is finally possible with cutting-edge thermal engineering advances that can protect the mission on its dangerous journey. Parker Solar Probe will carry four instrument suites designed to study magnetic fields, plasma and energetic particles, and image the solar wind.

Teaming for Success

Parker Solar Probe is part of NASA's Living With a Star program to explore aspects of the Sun-Earth system that directly affect life and society. The Living With a Star flight program is managed by the agency's Goddard Space Flight Center in Greenbelt, Maryland, for NASA's Science Mission Directorate in Washington. The Johns Hop

(Cont. on Pg-4)

August Meeting Minutes

By Kevin Bert

The August 2018 Business meeting of the Northern Cross Science Foundation was held at the GSC Technology Center in Germantown. President Jeff Setzer called the meeting to order at 8:55pm and welcomed 25 members and guests. Jeff then asked for standard reports.

Treasurer Gene Dupree tells the membership that the checking balance is \$11,704.70 and the Observatory balance remains at \$418.49.

Secretary Kevin Bert reports new members Daniel Goetz and his daughter Robyn joined from Glendale. Katy Zens from Shorewood just joined and was in attendance. Another new member Richard Sell comes to us from Germantown. He is son-in-law of former member Harold Rogers. Under the Astronomical League there were positive reports from members that participated in the National convention in Minneapolis. More details to come at future NCSF meetings. The 2019 National Convention (ALCon), will be held Kennedy Space Center.

Observatory Director fill in, Kevin Bert, reports that Dan is looking for leaders and assistants for the August 17 & 18. Contact Dan if a scheduled night is clear on your calendar and your willing to help.

Planners for the 2020 NCRAL Convention meeting did not meet last month. September 30th will be the next meeting. Contact Jeff Setzer or Mike Borchert for time and location if you are interested in attending. As a reminder to save the date for the 2019 regional convention to be held in the Quad cities May 3&4.

With no new business Jeff reminded members of the upcoming events. August 11th is the members event Small Scope Star Party at Harrington Beach. August 17th and 18th are Public Viewing nights at the Observatory. The Northwoods Starfest in Fall Creek Wisconsin also runs from the 17th to the 19th.

With no further business Jeff closed the meeting at 9:15 pm.

Small Scope Star Party Update

By Kevin Bert

The 2018 SSSP was held on August 11th at Harrington Beach. As I rolled up to the parking lot I was amazed to see a parking area almost filled up with cars. I later realized that the picnic shelter was rented out for a party. The usual parking spots eventually opened up and more and more scopes made an appearance. I did not get an entire count but after wading through the tripods a couple dozen might be underestimating. With clear skies the major planets were highlighting the evening. Venus early with Jupiter, Saturn and Mars all looking good. A slight haze from the Canadian Forest fires took away from the deep sky viewing but many objects were very rewarding regardless. A few Perseid meteors were glimpsed when not looking down through the scopes.

One apparent participant was blatantly disregarding the SSSP rules by exposing their bloated light bucket among the other scopes. The person was not a member of the NCSF and their discretion was overlooked. Some imagers were doing their thing as well. Though not officially participating in the SSSP it was nice to see them there enjoying the night as well.

As expected a number of guests from the public were also entertained with the viewing too. It was a party attitude most of the evening. I saw Jeff throwing a few cold one's back over a short period of time and was concerned so I went over to investigate. He said he was downing the wild duck and other Messier favorites with his Beer Scope. I had forgotten and was relieved to be reminded that this special import model is a hand held 15x50mm scope in a beer bottle. What an appropriate brew for this special night. A few sayings came to mind. When you say Andromeda, you've said it all. Aquarius from the land of sky blue waters. Good old Pleiades is best. M13, the one that made Hercules famous. There are others but you can sum it up in one final phrase. Stay thirsty for starlight my friend. I would like to see the face of the officer after hearing Jeff's explanation in case he gets pulled over after hours.

A few members lingered after snacks to view more of the meteors. Overall the shower was weak. It was a nice way to relax and end the evening. Thanks to all the members that participated in this years event. I hope to see you next year with your small scopes.

Astronomy and Astrophotography *By Mike Borchert*

Once again in the Phoenix area and there is always something astronomy related here. Attended an East Valley Astronomy Club meeting, which is open to the public. It doesn't always have to be a clear sky to be an astronomy night. The speaker tonight was Dr. Mike West, Deputy Director for Science at the Lowell Center up in Flagstaff. He spoke on the Large Scale Structure of the Universe.



Since animation was in Mike's background, his presentation was visually stunning. He spoke on the micro level in the universe, our solar system, and started his theme, that it is the way it is, not just by chance. Throughout the universe we see similarities. He then began a zoom out to galaxies and clusters of galaxies, and clusters of clusters of galaxies. The galaxies do seem to organize in what looks like "veins" of galaxies, and they seem to follow rules as to rotation, and attraction towards each other in a beautiful cosmic dance. The fact that the galaxies

seem to follow rules attracts some scientists into discovering where the universe came from, and where the universe is going.

One of the special events of the night was Dr. West's sharing a paper that he and several college's were going to release. He said we should keep it under wraps, but I know better. He showed us a simulation of say, some of the several small galaxies in our Local Group, over several million/billion years. As they continually spiraled around the larger galaxies and collided, or passed through each other, the larger galaxies continually stripped the outer stars from the smaller galaxy. In time, the smaller galaxies were left with a small cluster of strongly attracted stars. Hence, a globular cluster. In fact, some of these clusters are found with a black hole of sorts, in them. Obviously yet to be proven, it is an elegant explanation as to those groups of tightly bound cluster of stars Messier saw, and I wonder about today. NGC 3201 may be a good example of just one of these.

September Planets

By Gene DuPree

The night sky has more to offer than the planets. In September, the Milky Way is in the south at dusk. Some of the best objects in the sky are in that area for every type of observer. Start out with binoculars or a small

scope. My favorite is the Astro scan and an oxygen-3 filter on no moon nights, in a dark sky location. Which is coming up, the first couple weeks of September? There are so many objects it's hard to list them all; M, NGC to IC. Double stars are a good way to start out the night, and when the moon is out. So Keep Looking Up

September General meeting

Astronomy 101 - Kevin Bert

"The Art of Seeing"

The September class is The Universe Sampler chapter 9 "The Art of Seeing." As with many of life's endeavors, practice is the only way to become proficient at it. Looking through a telescope is no different. The ability to visually make out detail in an object or "Seeing," takes practice. You have no control over sky conditions but there are some other tools and methods you can apply to increase the amount of detail you can see with a telescope. We will cover many of the ones most often used along with ones you may not be aware of.

Constellation of the Month: Ursa Major

August Public Viewing Events

Harrington Beach July 28

by Mike Borchert

Planet Palooza – Public Viewing night

Saturday, July 28 Jeff Setzer announced that he was going to do an impromptu public viewing night. Jeff used social media to announce and there was a surprising number of the visitors, not from the campground, but from around the Harrington Beach area, as well as the general Milwaukee area. We danced between the clouds, the near full moon came up around 10 pm, but all in all it was a fun night full of 'wows'. The half-meter reflector had Saturn in view, the 5" had Jupiter. The moons of both were intriguing to many of the viewers. In between clouds, it gave a chance to talk a little astronomy, which everyone also enjoyed. It goes to show that not all astronomy events have to be planned to a T. Sometimes you have to be ready when the sky says OK.

Pike Lake State Forest August 4

By Charlotte DuPree

Another cloudy day and night. We waited in our viewing location hoping for a break in the clouds. There were two families that were as optimistic as we were and stayed with us for the evening. We answered every question they could think of, and eventually there was a parting in the clouds. Everyone did get a look at Jupiter and it's satellites, then the clouds did return. Thanks to Al for assisting with questions and his support.

Harrington Beach August 17

By Joyce Jentges

I was planning on staying home this night due to the fact that it was cloudy. I got a panicked call from Rich Sauve saying that he was the only person out there with a telescope and had a group of people out there. So I changed into warmer clothing, and quickly loaded a telescope in the car and went to HB. By the time I got there, we were only able to see the Moon and Jupiter before it clouded up permanently. Overall I would say there were between 20-30 people in attendance.

Main Program - Mike Borchert

"Citizen Science"

Mike Borchert will be doing a short demonstration at September's meeting on a citizen science project. We will go to the website, pick a project, and demonstrate just how easy it can be to volunteer your time in the name of astronomy. This is a project that can be done while listening to the latest podcast or even when you have a few minutes to burn. See you then.

"Chicago Backstage Pass" DVD

As time permits.

Harrington Beach August 18

By Kevin Bert

Jim Macak assisted me at 7:00 in the Observatory for an interesting evening. The picnic shelter was again rented out this time by a wedding party. Quite a few of that group were viewing through the scopes. The bride in her gown was particularly excited and had several shots taken of her looking through scopes. A few clouds lingered early but later blew over. The 20-inch Panarusk, 5 inch Refractor and the 9 1/4 SCT were set up to view. Extra supporting telescopes were set up by members in the parking lot. The moon and planets were early targets. The Hercules star cluster and other popular deep sky objects rounded out the evening. After the Andromeda Galaxy the final guests left as 11:00 pm neared. Well over 150 attended the evening.

Northwoods Starfest August 17/18

By Gene & Charlotte Dupree

Friday was cloudy, and hazy due to the smoke from the Canadian fires. This year star fest was held during a first quarter moon, so the midnight snacks were held at moon-setting 11:00. When we went back to the observing field, after snack time, we were greeted with a decent, but still hazy sky. We were surprised to see the many objects we did find. We worked on the 2018 scavenger hunt "Star Craving Mad" certificate list of 12 objects to find. We had to give up on the dimmer and early objects.

There were three paper sessions on Saturday afternoon, followed by the swap fest hour. Saturday was mostly clear, and the prospect for star gazing was very good. After the night snack the clouds had returned, so we were not able to finish the list. Attendees that attempted the viewing list were given their certificates anyway, with the promise that we would eventually finish. We were told we were the only ones seriously viewing the objects, even though we have seen most of them before.

Related Info

NCSF Welcomes New Members

Daniel Goetz

Robyn Goetz

Katy Zens

Richard Sell

Leaders for Public Viewing

September 8, Saturday

Pike lake

DuPrees

September 28, Friday

Harrington Beach State Park

DuPrees

September 29, Saturday

Harrington Beach

Leaders Needed

For Sale

Impressive large 14.5 inch telescope with unusual F 5.6 ratio! Reduced size secondary and curved vanes for less obstruction for planetary views. Custom made mirror made by known mirror maker Jim Mulherin of Torus Optical, now OMI. Torus specified the mirror "Each mirror is guaranteed to be corrected for spherical aberration to 1/10 wave, peak to valley on the wave front using the Caustic Test with no detectable astigmatism under the Wire Test." My personal notes indicate he might have ground it to 1/16th.

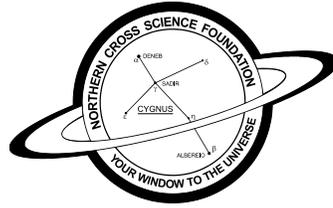
Gorgeous views of M 13, M 81 and 82 in the same field, M 57, M 27, Jupiter, Saturn, Andromeda (M 31), Orion Nebula (M 42)... Includes shroud to keep dew off of main mirror, 2 wood arms to move it on 2 wheels (see picture), older dob driver, 2 inch JMI focuser with 1.25 adapter, 6 inch off axis aperture mask with separate cover, wires for dew heater on the secondary. Have over \$4000 cost but willing to sell for about 1/2 that amount. Height at zenith 77.5 inches; height at 60 degrees is 68 inches.



Contact -Nolan Zadra

262 375-1290

SPECTRUM
5327 Cascade Drive
West Bend, WI 53095



2018 Board of Directors

President - Jeff Setzer
1418 Trillium CT
West Bend, WI 53095
262-338-8614
astrosetz@hotmail.com

Vice-President - Joyce Jentges
336 N Main Street, Apt.3
Cedar Grove, WI 53013
262 483- 4270
joycejentges@hotmail.com

Secretary - Kevin Bert
2292 Ridgewood Road
Grafton, WI 53024
262-674-0610
kevin.bert@hotmail.com

Treasurer - Gene DuPree
6219 Jay St.
Myra, WI 53095
262-675-0941
grdupree@charter.net

Dan Bert - Observatory Director
262-357-1973
1517 Green Valley Rd.
Grafton, WI 53024
dbert64@gmail.com

Rick Kazmierski - Newsletter
262-305-1895
5327 Cascade Drive
West Bend, WI 53095
rickkaz@charter.net

Mike Borchert
3656 Willow Creek Rd.
Colgate, WI
gmborchert@charter.net

(Cont. from Pg-1)

kings University Applied Physics Laboratory in Laurel, Maryland, manages the mission for NASA. APL is designing and building the spacecraft and will also operate it.

Why do we study the Sun and the solar wind?

—The Sun is the only star we *can* study up close. By studying this star we live with, we learn more about stars throughout the universe.

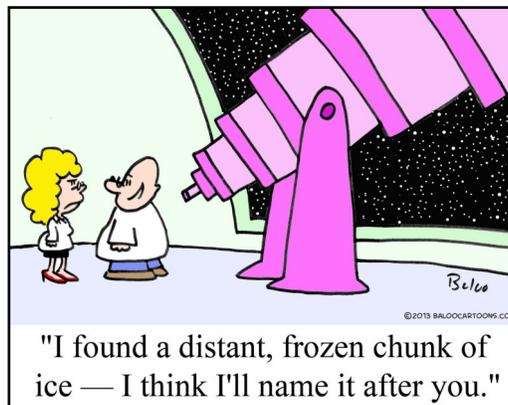
—The Sun is a source of light and heat for life on Earth. The more we know about it, the more we can understand how life on Earth developed.

—The Sun also affects Earth in less familiar ways. It is the source of the solar wind; a flow of ionized gases from the Sun that streams past Earth at speeds of more than 500 km per second (a million miles per hour).

—Disturbances in the solar wind shake Earth's magnetic field and pump energy into the radiation belts, part of a set of changes in near-Earth space known as space weather.

—Space weather can change the orbits of satellites, shorten their lifetimes, or interfere with onboard electronics. The more we learn about what causes space weather – and how to predict it – the more we can protect the satellites we depend on.

—The solar wind also fills up much of the solar system, dominating the space environment far past Earth. As we send spacecraft and astronauts further and further from home, we must understand this space environment just as early seafarers needed to understand the ocean.



"I found a distant, frozen chunk of ice — I think I'll name it after you."

SPECTRUM

Published by the Northern Cross Science Foundation, Inc. A non-profit organization based in South-eastern Wisconsin.

NCSF is a member of the North-Central Region of the Astronomical League.



NCSF supports the **International Dark Sky Association**

This Issue, along with back Issues of SPECTRUM, can be found on the NCSF Web Site.

Monthly Meeting Information

7:00 p.m. Astronomy 101 Mtg.
7:30 p.m. Main Program
Location at the -

GSC Technology Center
W189 N11161 Kleinmann Dr
Germantown, WI 53022

Spectrum Newsletter
5327 Cascade Drive
West Bend, WI 53095

Please send your Questions, Suggestions, Articles, and photos to:
rickkaz@charter.net