

# SPECTRUM

Northern Cross Science Foundation Newsletter

August 2012

## LOOKING UP

### August 2, Thursday

#### General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

Business Meeting to follow

### August 11, Saturday

#### Ice Age Center

7:30 p.m. Presentation

8:30 p.m. Telescope Viewing

Dundee, WI

### August 18, Saturday

#### Public Viewing

8:00 p.m.

Pike Lake

### August 22, Wednesday

#### Sidewalk Astronomy

7:00 p.m.

Bayshore Towne Center

### August 23, Thursday

#### Board Meeting

7:30 p.m.

House of Jeff Setzer

### August 24, Friday

#### Public Viewing

7:00 p.m.

Harrington Beach

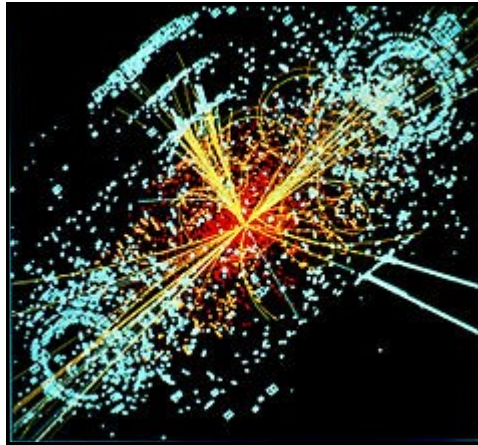
### August 25, Saturday

#### Public Viewing

7:00 p.m.

Harrington Beach

## Higgs Boson Particle Discovered ...Rick Kazmierski (Google Sources)



Higgs Boson Discovery - Artist conception

It's impossible to overstate the importance of the Higgs Boson, the discovery of which was announced at CERN (Conseil Européen pour la Recherche Nucléaire) on July 4th. Without this particle, you wouldn't exist. For that matter, the universe wouldn't exist

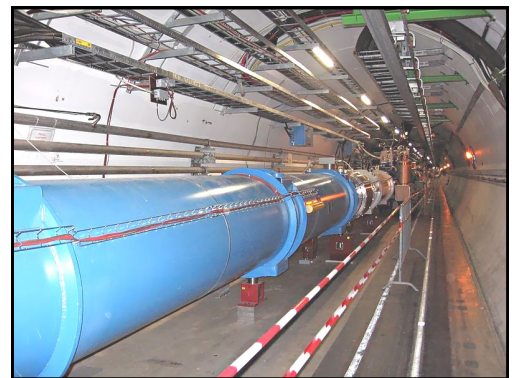
The **Higgs boson** or **Higgs particle** is a proposed elementary particle in the Standard Model of particle physics. The Higgs boson's existence would have profound importance in particle physics because it would prove the existence of the hypothetical **Higgs field**—the simplest of several proposed explanations for the origin of the symmetry-breaking mechanism by which elementary particles acquire mass.

The leading explanation is that a field exists that has non-zero strength everywhere—even in otherwise empty space—and that particles acquire mass by interacting with this so-called Higgs field. If this theory is true, a matching particle—the smallest possible excitation of the Higgs field—should also exist and be detectable, providing a crucial test of the theory. Consequently, it has been the target of a long search in particle physics. One of the primary goals of the Large Hadron Collider (LHC) at CERN in Geneva, Switzerland—the most powerful particle accelerator and one of the most complicated scientific instruments ever built—is to test the existence of the Higgs boson and measure its properties which would allow physicists to confirm this cornerstone of modern theory.

The Higgs boson is named for Peter Higgs who, along with two other teams, proposed the mechanism that suggested such a particle in 1964 and was the only one to explicitly predict the massive particle and identify some of its theoretical properties. In mainstream media it is often referred to as "the God particle", after the title of Leon Lederman's book on the topic (1993). Although the proposed particle is both important and elusive, the epithet is strongly disliked by physicists, who regard it as inappropriate sensationalism.

According to the Standard Model, the Higgs particle is a boson, a type of particle that allows multiple identical particles to exist in the same place in the same quantum state. It has no spin, electric charge, or color charge. It is also very unstable, decaying into other particles almost immediately. Some extensions of the Standard Model predict the existence of more than one kind of Higgs boson.

Proof of the Higgs field (by observing the associated particle), and evidence of its properties, are likely to greatly affect human understanding of the universe, validate the final unconfirmed part of the Standard Model as essentially correct, indicate which of several current particle physics theories are more likely correct, and open up "new" physics beyond current theories.



Large Hadron Collider Tunnel at CERN

(At AICoN 2012 in Chicago, we toured the Fermilab particle accelerator the same day CERN announced discovery of the Higgs Particle, which made the tour even more memorable.)

## July Meeting Minutes

By Kevin Bert

The July Business meeting of the Northern Cross Science Foundation was held at the Unitarian Church North. President Jeff Setzer opened the meeting at 9:10 pm and welcomed 15 members and guests. Jeff then asked for standard reports.

Treasurer Gene DuPree was absent. Jeff reported that there was \$9536.65 in the Checking.

Secretary Kevin Bert said the latest member to join was Rick Dusenbery from West Bend. He noted that the National League Convention in Chicago had started.

Under new business it was learned that Robert Powell was named Astronomy Foundation Treasurer. It is a foundation started by Astronomy Magazine editor Dave Eicher. Rob is an active amateur astronomer and corporate fundraiser who is a member of the Northern Cross and has a passion for outreach. Congratulations Rob! Jeff continued with a list of upcoming NCSF events. July 21<sup>st</sup> is a public viewing night at Pike Lake State Park. The 25<sup>th</sup> is both a Bayshore sidewalk astronomy event and twilight walk at Lac Lawrann. July 27<sup>th</sup> and 28<sup>th</sup> are Public viewing nights at Harrington Beach. The 28<sup>th</sup> is also a viewing night at Horicon

Marsh. Jeff noted that Wisconsin Observers Weekend, (WOW), will run from July 19 through the 22<sup>nd</sup>. Registration is open for the August 17-19 Northwoods Starfest in Fall Creek.

With no further business Jeff closed the meeting at 9:30 pm.

## Telescope Focusing

Is there a correct method of focusing a telescope? You hardly ever see this discussed, but there is a correct way to focus a telescope with a traditional rack and pinion. Extensive tests by the military have shown that you always start in the "out" position and then focus forward or "in."

The image will be out of focus at first and as you move the eyepiece inward it will slowly come into focus. When it's sharp, stop! Don't try to focus by using a "rocking" action. If you try to focus by the reverse method, which is by starting "in" and pulling out, serious errors can occur. The human eye tends to overcompensate or "accommodate" and the tiny muscles allowing the lens in your eye are under stress. Image sharpness is never as precise and eyestrain often results.



## Congratulations to NCSF's own "Gene DuPree"

Gene was this year's recipient of the **NCRAL Annual Region Award**. This award which is given to a member of NCRAL, demonstrates extraordinary skill, generosity and a devotion to promoting amateur astronomy and the support given to NCRAL events and goals.

Gene received this prestigious award July 7, at the ALCon 2012 Convention held in Chicago.

Past NCSF club winners have been Kevin Bert and Nick Nichols.

## Things to See In the August 2012 Night Sky By Don Miles

**Mars & Saturn:** Both very low in the western sky at sunset, so you'll need to look before it gets too dark if you want to see them. Mars (mag 1.1) will be highest in the sky at sunset and is now in the constellation Virgo. Saturn (mag 0.8) and the star Spica (mag 1.0) trail Mars by about 8 degrees. The pairing of Saturn and Spica will remain separated by about 4.5 degrees with Saturn being the upper of the two. As the month progresses, Mars will drift eastward and pass right between the two the night of the 14th. Mars speeds eastward until it's 9.5 degrees to the East of Saturn at month's end. The group sets about (11 / 10pm).

**Pluto:** Is highest in the southern sky about 11pm, and hasn't moved any perceivable distance from last year's position. It's still about 7 degrees above and to the left of the top of the teapot of Sagittarius, and around (mag 14.1). It is viewable, but not easy. (If you're looking for a reason to put forth the effort and try to find it...it seems a unique challenge to see something that only a minute percentage of the world's population has ever seen in person... besides in books).

**Neptune & Uranus:** Neptune (mag 7.8) is highest in the southern sky about 2am, and is in the constellation Aquarius. It will be at "opposition" (where we will be between the Sun and Neptune making Neptune appear *opposite* us from the Sun) on the 24th, which will also make it highest in the sky at midnight. Uranus rises about (11pm / 9pm) on the border of the constellations Cetus and Pisces. It is a naked eye object in descent skies, as it is at (mag 5.8). It's highest around sunrise, and in a small telescope, some people can see a tinge of blue or even a little greenish color to it.

**Jupiter & Venus:** This pair will rise in late evening/early morning, with Jupiter being the first up. Jupiter (mag -2.2) starts the month rising at about 2am and by about midnight by the end of the month. Venus rises about 3am throughout the month. Venus will also reach its "greatest western elongation" (the furthest away from a trailing Sun) on the 15th. After that, Venus will again drift back towards the Sun on its way around the back side. The pair starts the month about 15degrees apart with Jupiter being at the upper-right of the two, and will have over doubled that separation (39.5 degrees) by the end of the month.

**Mercury:** Is now a morning object, rising just ahead of the Sun. Look for Mercury about an hour before sunrise after the first week (to give it time to distance itself from the Sun). Its brightness will peak around mid-month at about (mag -1.4). Mercury too will be at its "greatest western elongation" on the 16th.

### Moon:

August 1st: Full Moon  
August 9th: Last Quarter  
August 17th: New Moon  
August 31st: First Quarter

### Special Events:

There is only one meteor shower worth mentioning this month, and those are the Perseids. They peak on the night of the 12th with peak rates of about 100/hr. These are one of the more reliable showers. There will be a recent last-quarter Moon that will rise about 1am, and may wash out some of the more faint meteors as the night goes on, but given the rates, it should still be an excellent show.

## August General Meeting

101 Class... by Kevin Bert

### "Stating the Location of Objects (2)"

The Astronomy 101 class for July is taken from The Universe Sampler manual. This is the later half of lesson 5 giving you the basic information on how objects are measured and located in the sky. A manual of the Universe Sampler is available for \$10.00.



The Constellation of the month; "Hercules"

### Main Program...

#### The City Dark - PBS Documentary

Is darkness becoming extinct? When film maker Ian Cheney moves from rural Maine to New York City he discovers streets awash in light and skies devoid of stars. He embarks on a journey to America's brightest and darkest corners, asking astronomers and ecologists what is lost in the glare of city lights. It provides a fascinating introduction to the science of the dark and our exploration of our relationship to the stars.

## July Events

### (Impromptu) Public Viewing July 7

Reported by Rob Powell

An impromptu reservation on 7/7/2012 evolved into quite the public outreach experience for about 35 people at the Jim & Gwen Plunkett Observatory. Rob & Michaela Powell had no sooner finished performing wasp-nest-dispatching & shrubbery-trimming duty when many campers walked and biked over to see the activity going on. Parents, alone and with their children, gawked at the half-meter fork-mounted telescope. The crowd came & went, promising to return after dark.

And return they did. Between 9PM and 11PM, about 35 people patiently queued up, repeatedly, to observe this summer's crowd favorites: Saturn, Alberio, M13, M20, and M57. A great time was had by all. Everyone left with our NCSF flyer, and the children went back to their tents laden with colorful handout materials and the invitation to return

### Pike Lake July 21

Reported for Al by Charlotte DuPree

Leader, Al Steinberg, set-up two scopes. He had about 50 visitors. The State Park had a large sign on highway 60 advertising the event. The Moon was difficult to see because it was low and with clouds. The seeing was excellent to the horizon, but the transparency was not the best. Looking at Saturn, early, it showed very good detail. He also looked at the Ring nebula.

### LaLawrann Moon Gazing July 25

Reported by Rick Kazmierski

Despite dire warnings of heat and storms, clear skies prevailed. West Bend Library staff ran activities in the barn, LLC volunteers did early field trips thru the conservancy and Mickey presented an Astronomy slide show. Six other NCSF members hosted 100 visitors with views of the 1st quarter moon and Saturn. Thanks to members Al, Jeff, Gene, Charlotte and Rick for assisting. The event ended at 9:00 pm as scheduled, with lighting toward the North and West.

### Bayshore Towne Center July 25

Reported by Rob Powell

Club members Don Miles, Bob Radtke, Ernie Mastroianni, and Rob Powell set up their telescopes in front of Hot Mama and Froyo Bella. With the sun still above the horizon, people enjoyed views of the moon, despite the inherent low contrast. After sunset, the moon became a much better sight as the background sky slowly darkened. By 9 PM, with the sky still bright with twilight, Saturn poked through, positioned just above Spica. About 150 visitors lined up 5 deep to view the rings of Saturn; many folks were repeat visitors, having come back from dinner after viewing the moon earlier in the evening. The last two Bayshore Town Center Sidewalk Astronomy events of 2012 will be held on 8/22 and 9/26. Come on out if you can make it. The public would benefit from many more telescopes looking up.

### For Sale

**Telescope -13.1" Dobsonian** - \$3,750 (Includes digital setting circles and a mirror, beautifully refigured by Galaxy Optics.)

**Binoculars 20x80 and Mount** - \$225 (New, the mount alone was \$280.)

Telescope & Binocular photos: (Robs Facebook page)

Contact - Rob Powell 262 894-2737 [archerychampion@gmail.com](mailto:archerychampion@gmail.com)

## RELATED INFO

### NEW MEMBERS

NCSF Welcomes

New Supporting Member

**Deborah Kern**

### Leaders for Public Viewing

August 11

**Ice Age Center**

Gene and Charlotte DuPree

August 18

**Pike Lake**

Al Steinberg

August 22

**Bayshore Towne Center**

Jeff Setzer

August 24

**Harrington Beach**

Leaders Needed

August 25

**Harrington Beach**

Leaders Needed

### Star Parties- 2012

#### **Northwoods Starfest**

August 17-19th

Hobbs Observatory

Fall Creek, WI

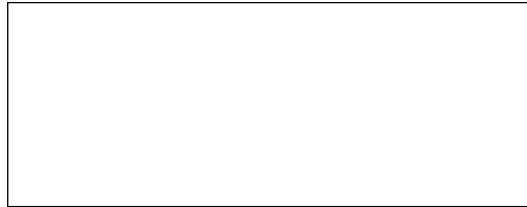
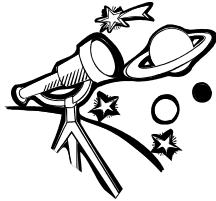
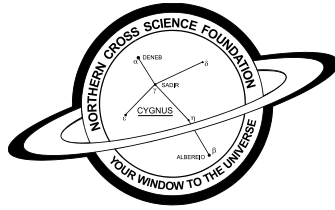
[www.cvastro.org](http://www.cvastro.org)

### **Jim and Gwen Plunkett Observatory**



**Observatory Director:  
Dan Bert: 262-375-2239**

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**Gene DuPree demonstrating how to make solar filters** photo's courtesy of Jeff Setzer



**WOW 2012**

*Warm but Successful!*



**NCSF - Observing Site**



Thanks to Joyce Jentges for publishing the July Spectrum while Rick and Mickey were vacationing out West.

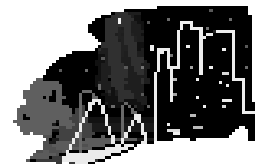
Our club has a "Discussion Group on Google"  
See our website: <http://www.ncsf.info/> for details.

**SPECTRUM**

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