

SPECTRUM

Northern Cross Science Foundation Newsletter

March 2011

LOOKING UP

March 3, Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

Business Meeting to follow

March 4 & 5 Friday & Saturday

Messier Marathon

Dusk

Harrington Beach

March 17, Thursday

Board Meeting

7:30 p.m.

Home of Joyce Jentges

March 19, Saturday

Annual Swap 'N' Sell

10:00 a.m. to 2:00 p.m.

Aviation Heritage Ctr.

Sheboygan Falls, WI

April 2, Saturday

Observatory Training

8:00 p.m.

Harrington Beach

April 7, Thursday

General Meeting

7:00 p.m. - To Be Announced

7:30 p.m. - To be Announced

Business Meeting to follow

Kepler Planet Hunter Finds 1,200 Possibilities *By Dennis Overbye...Published: 2/02/11*

In a long-awaited announcement, scientists operating NASA's Kepler planet-hunting satellite reported on Wednesday that they had identified 1,235 possible planets orbiting other stars, potentially tripling the number of known planets.

Of the new candidates, 68 are one and a quarter times the size of the Earth or smaller — smaller, that is, than any previously discovered planets outside the solar system, which are known as exoplanets. Fifty-four of the possible exoplanets are in the so-called habitable zones of stars dimmer and cooler than the Sun, where temperatures should be moderate enough for liquid water.

Astronomers said that it would take years to confirm that all of these candidates were really planets — by using ground-based telescopes to measure their masses, for example, or inspecting them to see if background stars are causing optical mischief. Many of them might never be vetted because of the dimness of their stars and the lack of telescope time and astronomers to do it all. But statistical tests of a sample suggest that 80 to 95 percent of the objects on it are real, as opposed to blips in the data.

"It boggles the mind," said the Kepler team's leader, William Borucki, of the Ames Research Center in Northern California.

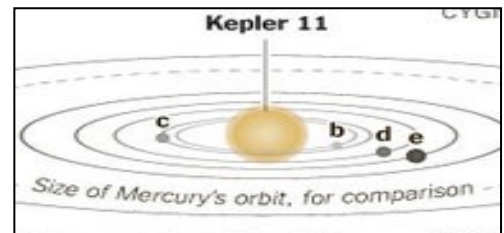
At first glance, not one of them appears to be another Earth, the kind of cosmic Eden fit for life as we know it, but the new results represent only four months' worth of data on a three-and-a-half-year project, and have left astronomers optimistic that they will eventually find Earth-like planets.

"For the first time in human history, we have a pool of potentially rocky habitable-zone planets," said Sara Seager of the Massachusetts Institute of Technology, who works with Kepler. "This is the first big step forward to answering the ancient question, 'How common are other Earths?'"

At a news conference at NASA headquarters in Washington on Wednesday, Mr. Borucki noted that the Kepler telescope surveys only one four-hundredth of the sky. If it could see

the whole sky, he said, "we would see 400,000 candidates." He is the lead author of a paper describing the new results that has been submitted to The Astrophysical Journal.

In a separate announcement, to be published in the journal Nature on Thursday, a group of Kepler astronomers led by Jack Lissauer of Ames said it had found a star with six planets — the most Kepler has yet discovered around one star — orbiting in close ranks in the same plane, no farther from their star than Mercury is from the Sun.



Kepler, launched into orbit around the Sun in March 2009, stares at a patch of the Milky Way near the Northern Cross, measuring the brightness of 156,000 stars every 30 minutes, looking for a pattern of dips that would be caused by planets crossing in front of their suns.

The goal is to assess the frequency of Earth-like planets around Sun-like stars. But in the four months of data analyzed so far, a similar telescope looking at our own Sun would have been lucky to have seen the Earth pass even once. Three transits are required for a planet to show up in Kepler's elaborate data-processing pipeline, which means that Kepler's next scheduled data release, in June 2012, could be a moment of truth for the mission.

For dimmer and cooler stars, the habitable, or "Goldilocks," zone, would be smaller, however, and planets in it would rack up transits more quickly.

Scientists had eagerly anticipated Wednesday's data release since June, when Kepler's scientists issued their first list of some 300 stars that were suspected of harboring planets but held back another (Cont'd on Pg. 4)

Remote Imaging *Why and How*

By Tom Schmidtkunz (Part 1 of 2)

Astronomical imaging has been an interest of mine for a long time. Early on, I was amazed that film and a small camera could capture things no scope could show, like Barnard's Loop. Imaging is not for everyone. But these days, with so many advances in products and services, amateurs can do super high quality work.

Remote imaging is a good fit for me. I have imaged under New Mexico Skies quite a few times. Understanding the process by being on site helps me understand and use resources remotely. I use Global Rent a Scope: www.global-rent-a-scope.com.

They have facilities in New Mexico, Spain, and Australia. Because of this, you can image at any time somewhere in the world, if it is clear. Medium to large Takahashi refractors rent for lower amounts, high end large Ritchey-Chrétien systems rent for much more. All details are on the web site. They have tech support, but it helps greatly if you have done this before. Weather maps and webcams show you current weather conditions.

Why would someone want to do this? Imaging can be very difficult in Wisconsin.

We are not exactly weather or light pollution friendly. While it is possible to lug all kinds of equipment to a remote site, get aligned, and set up everything, practically, it is nearly impossible. A solution that works for many is having an observatory in your back yard. You can go out when the weather is favorable, flip the switch, and start imaging.



NGC2264 by Tom Schmidtkunz

One of the big draws for me is being able to image from Australia, and get images from objects I cannot see in Wisconsin. Also, sites out west are at high altitude, and far from cities, and that means dark nights with low humidity. They also have very accurate, high quality mounts. The advantage of this is that you can take few-

er longer exposures, rather than many shorter ones that would be necessary with a poorer mount. Longer exposures result in better image quality. The software for running this is great, and you can 'watch' the scope do everything: search, center, focus, get guide star, guide, obtain images, change filters. Resultant files are available via FTP Surfer to copy down to your computer. You get the raw images, and fully reduced ones (dark, flat, and bias subtracted). This helps a lot. You can then finish processing yourself.

Lot of people who image in their yard, or at a club's observatory, image in a shed or room that is a number of feet from the telescope. When you think about it, it doesn't matter at all if this distance is 10 feet, 1 mile, or 12,500 miles. Also, this equipment is very expensive, and can obsolete quickly. Renting it when you need it frees you from constantly upgrading, and getting components and software to work well with each other.

Like I say, this is not for everyone, but offers many advantages. The next article will get into the actual mechanics of remote imaging.

Things to See In the March 2011 Night Sky By Don Miles

Mercury: Mercury (mag -0.8) will be rising in the SE sky just before the sun (~6:30am) early in the month, and will pass "behind" the Sun mid-month, then turn into an evening object as it is now trailing the sun and so will be just visible as the sun sets.

Neptune, Jupiter, & Uranus: All three [Neptune (mag 8.0), Jupiter (mag -2.0), and Uranus (mag. 6.0)] are too close to the sun to be easily seen. Both Neptune & Jupiter will rise before the sun (~6am), but will be lost in the sun's glare, and Uranus trails the sun early in the month, and ends up in front of the sun by month's end, but still too close to pick out.

Venus: Brilliant Venus (mag -4.0) trails the sun, and sets ~6pm early in the month, but by ~8pm later in the month.

Saturn & Mars: Saturn (~mag 0.6) rises before the sun sets, so will be getting high in the SE sky as it gets dark. Saturn will transit (be directly overhead) about 1:30am, and sets around sunrise. Mars (mag. -0.6) is also up as sunset, but transits around 9:30pm, and sets around 3am.

Moon:
March 7th: Last Quarter
March 15th: New Moon
March 23rd: First Quarter
March 30th: Full Moon

Special Events:
Messier Marathon... Hope you've gotten your scope out since last fall. If not, you've got a couple of weeks to get used to the current sky orientation before the Marathon weekend (March 13th). If

you've tried a Marathon in the past, and found yourself wanting better reference charts or thought of something that would have made the event more enjoyable and you've still got some time to tie up those loose ends. If you've never tried one, and you're wondering what you've been missing (or not), look up some of the past February/March newsletters for tips and other helpful information. Hope you give it a try. Good Luck.



4th Annual Swap 'N' Sell



Sponsored by Sheboygan Astronomical Society
Saturday, March 19th, 2011
Aviation Heritage Center
Sheboygan Airport
N6191 Resource Drive, Sheboygan Falls, WI 53085
10:00 a.m. to 2:00 p.m.

March General Meeting

101 Class... by Kevin Bert

This months 101 class is entitled:

"Types of Star Charts."

After a brief presentation on the basic types of star charts, I am encouraging members to bring in one of their own favorite non-computer star charts for kind of a show and tell.

Constellation of the month

"Cepheus"



Main Program by Rick Kazmierski

This Months Main Program is entitled .

"Building a Home Observatory"

The construction of our backyard observatory will be discussed. Sometimes exhilarating, sometimes frustrating; this project took on a life of its own. It consumed all my free time and much of Mickey's for nine months and was a family effort. It changed the way I observe and photograph the sky much more rewarding and enjoyable.

February Events

Saturday February 5

Harrington Beach

Gene DuPree reported that that she and Gene, and Dan Raasch were leaders for this Sky & Hike event. Cloudy skies limited public attendance to a dozen visitors. Although the observatory roof wasn't opened, videos and discussion were available to any interested. The event ended at 9:00pm.

Saturday February 12

Pike Lake

Gene, Charlotte, Al, and myself, Don Miles, attended this Ski & Hike event. Gene & Charlotte set up a scope inside the warm-up building with other "Friends of the Park", and gave out club information and answered questions. Al and myself set up in an area next to one of the ski trails. The evening was mostly cloudy, but had brief "thinning's" of the clouds allowing visitors a view of the first-quarter moon. I would estimate that at least 100 stopped to view.

"2011 NCSF Annual Banquet"

Our Club's Annual Banquet was another huge success! This year we totaled 29 members to include spouses and family. Fox and Hounds Restaurant in Hubertus did not disappoint, the food was appealing, delicious and portions very generous. Laughter and good conversation was had by all! A very special thanks to Charlotte and Gene DuPree for communications, registering, all the work necessary to make this a most memorable event!



If there was no such thing as night, the Sun would run out twice as fast!

CURRENT CLACK

Leaders for Public

April 2

Observatory Training

Kevin and Dan Bert

Star Parties

NCRAL Convention

April 29 & 30

Green Bay, WI

www.npmas.org

Wisconsin Observers Weekend

June 30—July 3

Hartman Creek State Park, WB

www.new-star.org

Northwoods Starfest

August 26 - 28

www.cvastro.org

Prairie Skies

September 22 - 25

Kankakee, IL

www.prairieskies.org

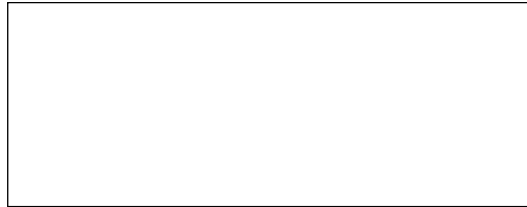
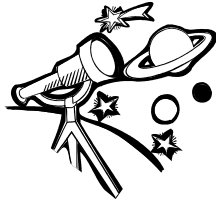
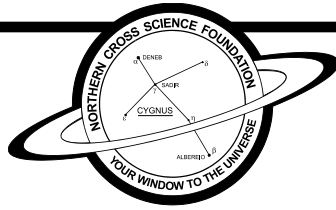
Jim and Gwen Plunkett Observatory



Observatory Director:
Dan Bert: 262-375-2239

Monthly Meeting Location
Unitarian Church North
13800 N. Port Wash. Rd.
Mequon, WI 53097

SPECTRUM
5327 Cascade Drive
West Bend, WI 53095



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(Cont'd from pg. 1)

400 for study. One of the 400 was a Sun-like star about 2,000 light-years from Earth in the constellation Cygnus that went by the name of KOI 157, for Kepler Object of Interest. In the spring of 2009, astronomers noticed that it seemed to have five candidate planets, four with nearly the same orbital periods, and in the same plane, like an old vinyl record, Dr. Lissauer said. Two of them came so close that every 50 days one of them would look as large as a full moon as seen from the other, Dr. Lissauer calculated.

"I got very interested in this system," Dr. Lissauer said. "Five was the most we had around any target." Moreover, the planets' proximity to one another meant that they would interact gravitationally, allowing them to be weighed. In the fall, a sixth planet the innermost was found. By measuring the slight variations in transit times caused by the gravitational interference of the inner five planets with one another, Dr. Lissauer and his colleagues were able to calculate their masses and densities. These measurements confirmed they were so-called super-Earths, with masses ranging from 2 to 13 times that of the Earth. But they were also puffy, probably containing mixtures of rock, water and gas, rather than being pure rock like another super-Earth, Kepler 10b, a hunk of lava whose existence was announced last month at a meeting in Seattle. Dr. Lissauer described them as "sort of like marshmallows with a little hard-candy core."

As a result, Dr. Lissauer said, "super-Earths might not resemble Earth at all. They may be more like Neptune than Earth-like."

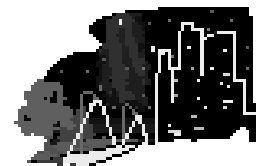
Mr. Borucki said the growing number of small planets revealed by Kepler was a welcome change from the early days of exoplanet research, when most of the planets discovered were Jupiter-size giants hugging their stars in close orbits, leading theorists to speculate that smaller planets might be thrown outward from their stars by gravitational forces or dragged right into those suns. "Those little guys are still there," he said, "and we're delighted to see them."

SPECTRUM

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