Observer Newsletter

EVANSVILLE ASTRONOMICAL SOCIETY, INC.

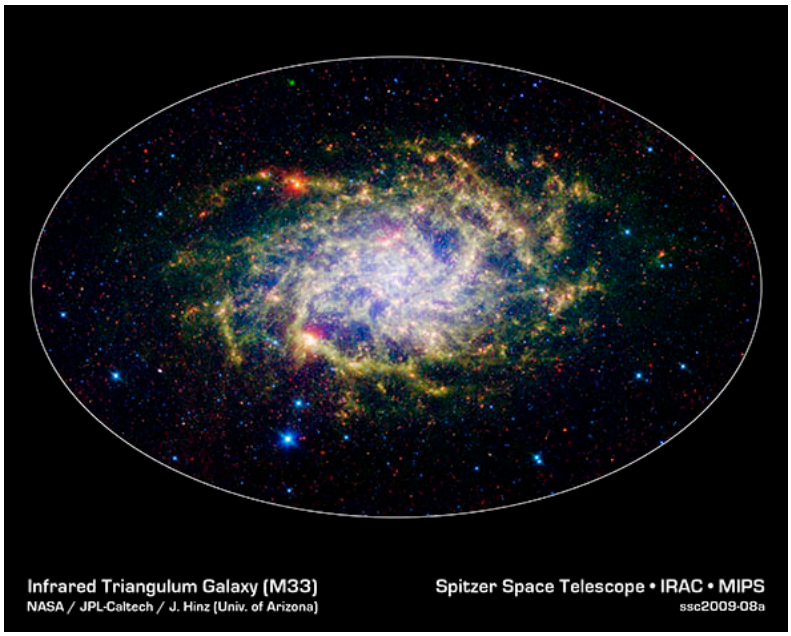
November 2012

Above: This image of the **Andromeda Galaxy, M33** is a composite of UV data from the Galaxy Evolution Explorer (GALEX) and IR data from the Spitzer Space Telescope. The GALEX UV data pick up the relatively hotter regions brimming with young and old stars. The hotter, young stars are seen in blue (150 nm) while older stars are displayed in green (230 nm). The bright yellow spot in the galaxy's center depicts a particularly dense population of older stars. Swaths of red in the galaxy's disk indicate areas where the Spitzer Space Telescope found cool, dusty regions where stars are forming from the collapsing cosmic dust and gas.

Credit: http://www.spitzer.caltech.edu/images/2216-sig06-024-Amazing-Andromeda-Galaxy

For more info on the night sky objects of November, play the Movie of Tonight's Sky at Amazing Space.

Inside this Issue...



Left: This Spitzer Space Telescope image of the **Triangulum Galaxy**, **M33** is a false color composite of four infrared wavelengths: blue represents light at 3.6 and 4.5 micrometers, green shows light of 8.0 micrometers, and red is 24 micrometer light. Stars appear as blue gems. Dust that is rich in organic molecules appears green. The diffuse orange-red glowing areas indicate star-forming regions. With its ability to detect cold, dark dust, Spitzer can see emission from cooler material well beyond the visible range of M33's disk.

Credit: http://www.spitzer.caltech.edu/images/2013-ssc2009-08a-M33-A-Close-Neighbor-Reveals-its-True-Size-and-Splendor

The EAS newsletter, **Observer**, is published monthly. Anyone wishing to contribute articles or photos may mail them to the club's PO box: EAS, PO box 3474, Evansville, IN 47733, or e-mail them to the editor at: gneireiter@wowway.com

The **Evansville Astronomical Society** (EAS) is a non-profit organization fully incorporated in the state of Indiana. It has, as its primary goal, the advancement of amateur astronomy. Founded in 1952, the society seeks to:

1... maintain adequate facilities for its members and for the public in order to extensively study the skies, and

2... promote an educational program for those who wish to learn more about the science of Astronomy.

Meetings are held the third Friday of each month, except June, when the annual EAS picnic is held. The society also sponsors monthly Open House events during the warmer seasons that afford the public an opportunity to tour the observatory.

EAS 2012 Officers and Contacts

President - Scott Conner 812.604.7164
ssconner24@gmail.com

Vice President - Tony Bryan

Secretary - Charleen Kaelin 812.303.1711

Treasurer - Scott Bishop

Counselors - Michael Borman, Kent Brenton, and Ed Erickson

Webmaster - Michael Borman

Program Director - open

Newsletter Editor - George Neireiter
812.629.7822 gneireiter@wowway.com

For more information about EAS or directions to the Observatory, visit the club's web page:
http://www.evansvilleastro.org/

Local Events and Information

EAS Outreach... Joe Caruso provided a tour of the observatory for some BOY SCOUTS on October 9. The weather was good and the Scouts were able to see M13 (the Hercules Globular Cluster) and M 31 (the Andromeda Galaxy). Many thanks to Joe.

Cleanup, Open House/ PSW... On Saturday the 13th of Oct. we had a very successful cleanup and open house. Ted Ubelhor and Dave Kube did a wonderful job of cleaning up the outside of the observatory and the grounds look great. Dave, Scott Bishop, and I got down on our knees and scrubbed the floor with steel wool and got most of the rust up off the floor. We will need to put a coat of wax back on it, and it will stay nice for awhile. Charleen Kaelin cleaned many of the chairs and got them looking good. Tony Bryan and Dave worked on the fence. Wayne Donohoo came for the open house. Lets try to keep the place looking good now !

As far as the open house (PSW), we had 25 people show up. I did a show for them that lasted about 45 to 50 minutes. Part of the group was a Boy Scout troop that was camping in the park nearby. It was too cloudy to observe, but they all enjoyed the show.

The day was long. We need to reconsider trying to do all of this on one day. Or, consider having some members come early and finish with the potluck while another group shows up later for the potluck (which was very good) and do the open house. Just a thought for the future. Submitted by Ken Harris.

Calendars... The Astronomy wall calendars will be available at the November meeting. The Year-In-Space desk calendars need to be ordered -- cost is $13.00 each. If interested, let Scott Bishop know.

Elections... EAS Officer elections are on the agenda for the November meeting. With Scott Conner retiring from the president position, there is an opportunity for someone to become more active.

December 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6 Last	7	8
9	10	11	12	13 New	14	15
16	17	18	19 First	20	21 Regular Mtg.	22
23	24	25	26	27	28 Full	29
30	31					

generated by HTML Calendar Maker 1.1. Copyright (C) 2009 John Dalbey.

November Events reminder...

Regular Meeting Nov. 16 (Friday) 7:30 pm Wahnsiedler Observatory
(note: *Election of Officers for 2013)*

December Events...

Regular Meeting Dec. 21 (Friday) 7:30 pm Wahnsiedler Observatory
(Holiday party and Astro Quiz with Mike Borman)

Moon phase times (Evansville local time)

full	4:22 a	Dec 28	new	2:42 a	Dec 13
third quarter	9:32 a	Dec 6	first quarter	11:19 p	Dec 19

courtesy of Time and Date

A Cosmic Tease: Trials of the Herschel Space Telescope Science Teams

By Dr. Marc J. Kuchner

Vast fields of marble-sized chunks of ice and rock spun slowly in the darkness this week, and I sat in the back of a grey conference room with white plastic tables spread with papers and laptops. I was sitting in on a meeting of an international team of astronomers gathered to analyze data from the Herschel Infrared Observatory. This telescope, sometimes just called Herschel, orbits the Sun about a million miles from the Earth.

The meeting began with dinner at Karl's house. Karl charred chorizo on the backyard grill while the airplanes dribbled into Dulles airport. Our colleagues arrived, jet-lagged and yawning, from Germany, Sweden, and Spain, and we sat on Karl's couches catching up on the latest gossip. The unemployment level in Spain is about twenty percent, so research funding there is hard to come by these days. That's not nice to hear. But it cheered us up to be with old friends.

The meeting commenced the next morning, as the vast fields of ice and rock continued to spin — shards glinting in the starlight. Or maybe they didn't. Maybe they didn't exist at all.

You see, this team is looking at a series of images of stars taken by a device called a bolometer that is blind to ordinary starlight. Instead, the bolometer inside Herschel senses infrared light, a kind of light that we would probably refer to as heat if we could feel it. But the idea of pointing the bolometer at the stars was not to collect ordinary starlight. It was to measure heat coming from the vicinity of these stars, like an infrared security camera, in case there was something else to be found lurking nearby.

And lo and behold, for a handful of stars, the bolometer measurements were off the charts ! Maybe something was orbiting these stars.

From the details of the bolometer readings — which channels lit up and so on — you would guess that this stuff took the form of majestic fields or rings of icy and rocky particles. It would be a new kind of disk, a discovery worth writing home to Madrid about.

There are several teams of astronomers analyzing data from the Herschel Space Telescope. They call themselves by oddly inappropriate sounding acronyms: GASPS, DUNES, DEBRIS. For the time being, the scientists on these teams are the only ones with access to the Herschel data. But in January, all the data these teams are working on will suddenly be released to the public. So they are all under pressure to finish their work by then. The team whose meeting I was sitting in on would like to publish a paper about the new disks by then.

But it's not so simple. The stars that this team had measured were relatively nearby as stars go, less than a few hundred light years. But the universe is big, and full of galaxies of all kinds — a sea of galaxies starting from maybe a hundred thousand light years away, and stretching on and on. Maybe one of those background galaxies was lined up with each of the stars that had lit up the bolometer — fooling us into thinking they were seeing disks around these stars.

The team argued and paced, and then broke for lunch. We marched to the cafeteria through the rain. Meanwhile, vast fields of marble-sized chunks of ice and rock spun slowly in the darkness. Or maybe they didn't.

What else did Herschel recently uncover? Find out at http://spaceplace.nasa.gov/comet-ocean.

Dr. Marc J. Kuchner is an astrophysicist at the Exoplanets and Stellar Astrophysics Laboratory at NASA's Goddard Space Flight Center. NASA's

Astrophysics Division works on big questions about the origin and evolution of the universe, galaxies, and planetary systems. Explore more at http://www.science.nasa.gov/astrophysics/

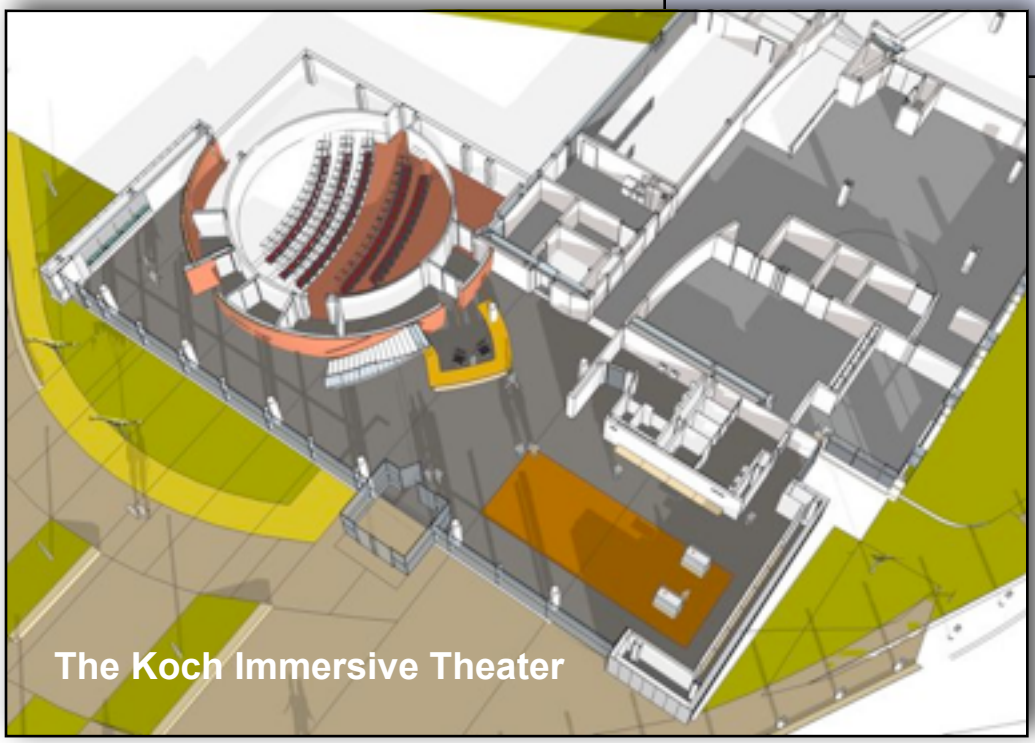
Samuel Pierpoint Langley, who developed the bolometer in 1878. His instrument detects a broad range of infrared wavelengths, sensitive to differences in temperature of one hundred-thousandth of a degree Celsius (0.00001 C). In 1961, Frank Low developed the germanium bolometer, which is hundreds of times more sensitive than previous detectors and capable of

Did you know that... "By 1880, Langley's bolometer was refined enough to detect thermal radiation from a cow a quarter of a mile away." For more details of the bolometer click here.

Upcoming Programs...

November 16th.... An Update on the Museum Renovations

by Mitch Luman
Science Director



When the Evansville Museum completes its seven-year, $14 Million renovation late next year, it will add a giant screen immersive theater with planetarium capabilities, astronomy in southern Indiana will never be the same. Mitch will bring us all up to date.

December 21.... Holiday Party and Astro Quiz with Mike Borman

Constellation Feature: Andromeda and Triangulum

The **Andromeda** constellation is easily found high in the sky just south of Cassiopeia. Its leading star (Alpha Andromedae or Alpheratz) is shared with the constellation Pegasus at the northeast corner of the square.

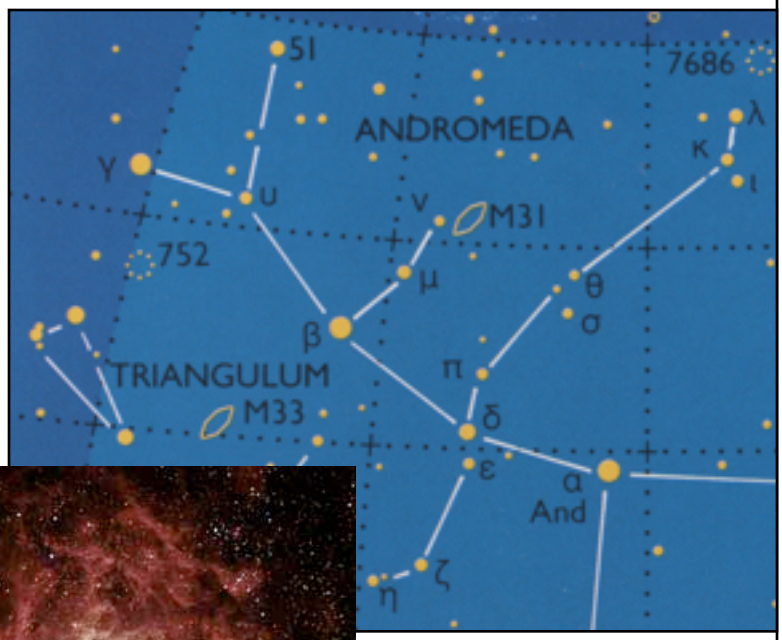
The 2nd magnitude star **Gamma**, at the "foot" of the constellation, is one of the most beautiful doubles in the night sky and is readily resolved in small telescopes into a bright golden-yellow primary and a bluish-green companion. The latter is also a double when viewed with a larger telescope.

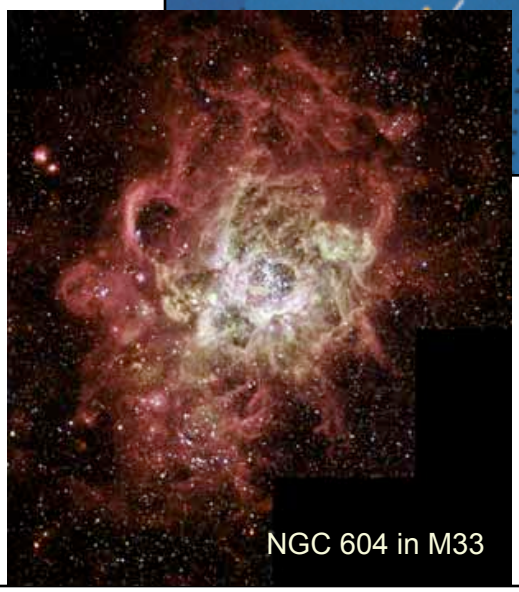
Located near **Nu** is the Andromeda Galaxy, a spiral like the Milky Way galaxy, but much bigger with a diameter of 150,000 light-years. In fact, it is the largest galaxy in our Local Group. Of about 4th magnitude in brightness, it is just barely visible to the naked eye as a fuzzy patch. In the Messier catalogue it is listed as **M31**. With binoculars, M31 appears as a distinct oval. Two companion galaxies can be found nearby as well: M32 and M110. With larger telescopes, individual stars and a dark dust lane can resolved in M31. See page 1 for a stunning composite image using the Galex (UV) and Spitzer (IR) telescopes.

The constellation **Triangulum,** is readily found to the east-southeast of Andromeda's Beta star. Composed of three main stars forming a tight isosceles triangle, it is far from bright, with Alpha and Beta just at 3rd magnitude.

The constellation's main claim to fame is the face-on spiral galaxy **M33**, also called the Triangulum galaxy. It is located about halfway between Alpha Trianguli and Beta Andromedae. Possibly visible to the naked eye on a really dark night, it is readily seen as a hazy patch with binoculars. Larger telescopes are needed to view its wide-open spiral arms.

NGC 604 is located in a spiral arm of M33. It is a colorful nebula and one of the largest known cauldrons of star birth.





Containing more than 200 brilliant blue stars, NGC 604 is some 1300 light-years across, more than 100x the size of the Orion nebula which contains just four bright central stars.

For a 60-second tour of NGC 604 click here.

Credits: Text and constellation diagram from *The Star Guide*, by Robin Kerrod, 1993 MacMillan, pages 64-65.
Image of NGC 604: http://hubblesite.org/newscenter/archive/releases/2003/30/image/a/

EAS Meeting Minutes -- October 19, 2012

The meeting was CALLED TO ORDER by President Scott Conner at 7:31 pm with 15 people in attendance.

It was moved and seconded to approve the MINUTES of the previous month as seen on the EAS internet page.

Tony Bryan announced the UPCOMING EVENTS:

Regular Meeting	Friday, November 16	7:30 PM
Regular Meeting & Christmas Party	Friday, December 21	7:30 PM

There was 1 visitor: Angie McDonald, a reporter for the Dubois County Boomer.

No Treasurer's Report was available. The President mentioned to the attendees that the Astronomy wall CALENDARS will be available at the November meeting. The desk calendars need to be ordered individually for $13.00. If interested, let Scott Bishop know.

SPECIAL PROJECTS

The president said there is more work to be done in the DOME like painting and such. Supplies are available to volunteers.

OLD BUSINESS

Joe Caruso did a tour for some BOY SCOUTS on October 9. The weather was good and the Scouts were able to see M13 (the Hercules Globular Cluster) and M 31 (the Andromeda Galaxy). Thanks to Joe.

Our 1st annual CLEAN-UP and POT LUCK DINNER was held on Saturday, October 13. There were six members in attendance: Ken Harris, Ted Ubelhor, Tony Bryan, Dave Kube, Scott Bishop, and Charleen Kaelin. Good job, and many thanks for volunteering.

NEW BUSINESS

We have been asked to provide telescopes for HARVEST FEST at Wesselman Woods on October 27, for observing from dusk to 9:00 pm. Telescopes are needed. Call Scott Conner to volunteer and for getting directions.

EAS is in need of a NEW MOUNT for the telescope in the dome. Estimated cost is about $9,000. Fortunately, Jim Havens, founder of SWICA, a group involved with educating the

public about astronomy, indicated that EAS is eligible for a grant to get the job done. Next step is to determine what mount we need.

Scott Conner reminded the attendees that he is RETIRING as EAS President. Now is the time to nominate yourself to be the next president. Elections are next month.

Our December meeting is our annual CHRISTMAS PARTY and ASTRONOMY QUIZ to be held at the observatory. Bring a SNACK or DESSERT. Mike Borman will be the Quiz Master.

Charleen Kaelin gave an astronomy report for this month.

LATE BREAKING NEWS! ! !
I
N
C
O
M
I
N
G

Scott informed the attendees that starting in October, a **COMET** is coming our way that is so large and bright that it will be visible with the naked eye, even during the day. It will be in the vicinity of the Great Comet of 1680. *

JOE WHEELOCK has donated a focuser for the 16" telescope. Many thanks.

Lastly, Charleen Kaelin presented a "What's Up ?" report on this month's astronomy happenings for this month.

UPCOMING PROGRAMS include the following:

November – Mitch Luman on the renovation plans for the Evansville Museum
December – EAS Christmas Party, and Astroquiz to be presented by Mike Borman

Tom Picket presented a program on Dark Matter and Dark Energy.

Respectfully submitted,

Charleen Kaelin
Secretary

* editor's note: For details about comet C/2012 (ISON), check out this article on Space.com. "The few days surrounding the comet's closest approach to the sun on Nov. 28, 2013, are likely to be most interesting.", states Joe Rao, as he observed that November 28, 2013 will be Thanksgiving Day in the U.S. He then asks "Will Comet ISON be a dazzler, or a turkey?"