The IAS News & Views

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Indiana Astronomical Society/Link Observatory Public Lecture
June 1, 2013
8:00 PM
Goethe Link Observatory

Interface Region Imaging Spectrograph

Daniel Cervantes

NASA Solar System Ambassador

Understanding the interface between the photosphere and corona remains a fundamental challenge in solar and heliospheric science. The Interface Region Imaging Spectrograph (IRIS) mission opens a window of discovery into this crucial region by tracing the flow of energy and plasma through the chromosphere and transition region into the corona using spectrometry and imaging. IRIS is designed to provide significant new information to increase our understanding of energy transport into the corona and solar wind and provide an archetype for all stellar atmospheres. The unique instrument capabilities, coupled with state of the art 3-D modeling, will fill a large gap in our knowledge of this dynamic region of the solar atmosphere. The mission will extend the scientific output of existing heliophysics spacecraft that follow the effects of energy release processes from the sun to Earth.

IRIS is projected to be launched on June 26, 2013.

Daniel is currently a physicist with Crane Division, Naval Surface Warfare Center in Crane, Indiana. He has a Masters Degree in Physics from Purdue University and previously taught Physics and Astronomy at IUPUI. Daniel is a NASA/JPL Solar System Ambassador, Director of Feynman Observatory and a member of the *Indiana Astronomical Society* and the *Stonebelt Stargazers*.

IAS NEWS

From the President's Desk

The Indiana Astronomical Society has been asked to host an observing event at the Indianapolis Convention Center for American Astronomical Society attendees on Monday evening the 3rd of June at 9 PM, with a rain date of Tuesday, the 4th of June. We will need your help to make this event a success. The plaza in front of the Convention Center will serve as our site. We will have to concentrate on bright objects such as Saturn and bright stars due to the lighting downtown. If you have access to a light pollution /skyglow filter, that would be a plus. I am in the process of arranging adjacent parking for those who participate.

We will be host to a group of adults and teenagers from the Pendleton Library during our 1st of June meeting at Link. They are part of the LOSSC (Link Observatory & Space Science Center) outreach at central Indiana libraries. They will be interested in seeing the Link telescope and observe with us for a while after the meeting. Please welcome them as potential new members.

We need your assistance for several presentations at our Link meetings this summer. Please contact Doug Brown and let him know that you would like to give a talk on a subject that you are comfortable with. You do not have to be an expert to give a presentation. As active observers you have a wealth of practical knowledge that will be well received by our members and newcomers alike.

American Astronomical Society will meet in Indy

American Astronomical Society will meet in Indy the first week of June, 2013. There will likely be sessions of interest to IAS members, and I think everyone will enjoy the exhibit hall. Registration is pretty pricey, though they usually have special arrangements for teachers and workshop attendees. Members of the press are also welcome.

Help Lowell Observatory "Restore The Clark"?

Good morning from Flagstaff, Arizona!

I am writing to you from Lowell Observatory. We're running a campaign to restore the 117 year old 24" refracting Alvan Clark Telescope here on Mars Hill. We're nearing the last stages of the campaign, so I wanted to reach out to you in the Greenwood area and see if there was any way to spread the word to the astronomy community out there. The Clark is our primary education tool, and it's been looked through by over a million people. But after 100 years, we need serious repairs to keep it open to the public!.

Here's the link to our project:
http://www.indiegogo.com/projects/restore-the-clark

There are tons of interesting astronomy related perks and we even added a perk that would be oriented towards astronomy clubs and associations - a live webinar Q&A session with an astronomer of your choice! (Some of our recent astronomer accolades include the tracking of the ISON comet and discovery of water vapor on exoplanets.)

(Scroll down through "perks" on the right side of the Indiegogo page to read about the "webinar with Lowell astronomer".)

An LATimes article about the campaign:
http://www.latimes.com/news/science/sciencenow/la-sci-sn-lowell-observatory-indiegogo-crowdsourcing-20130320 ,0,3576001.story

A Sky&Telescope article:
http://www.skyandtelescope.com/news/Restoring-the-Clark-Telescope-197706371.html
The Clark Telescope studied mars, helped found the theory of the expanding Universe, and helped map the moon for Apollo 11.

The online campaign only lasts until May 12, but we will continue to raise money for the Clark on our own after that time.

If you want to know anything else about the project, let me know!

Good viewing.
Sincerely,

Oakley Anderson-Moore
Media Assistant
Lowell Observatory
(928) 233-3260

Recent Events for the IAS

McCloud Monthly Star Gaze

The May McCloud Star Gaze was a washout.

The first Link campout of the year was a washout

Upcoming Public Events

IAS/Holcomb Observatory Program Planning Meeting–7:00 PM, May 28, 2013

The IAS Board Meeting is being held at Holcomb Observatory on the Butler Campus at 7:00PM. Should you have an issue that you would the Board to address, please contact Bill Conner via the webpage iasindy.org under the contact us section.

IAS/Link Observatory General Meeting and Public Lecture – June 1 8:00 PM

The IAS/Link Observatory general meeting and public lecture June 1 at 8:00PM at the Goethe Link Observatory

McCloud Monthly Star Gaze June 15, 2013 8:30PM.

LOSSC Public Event June 1and June 22

IAS/Holcomb Observatory Program Planning Meeting–7:00 PM, June 25, 2013

The IAS Board Meeting is being held at Holcomb Observatory on the Butler Campus at 7:00PM. Should you have an issue that you would the Board to address, please contact Bill Conner via the webpage iasindy.org under the contact us section.

IAS/Link Observatory General Meeting and Public Lecture – June 29 8:00 PM

The IAS/Link Observatory general meeting and public lecture June 29 at 8:00PM at the Goethe Link Observatory

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NEW ASTRONOMERS GROUP
June 1, 2013
Logging Observations
Bruce Bowman

Bruce will lead us through an exercise of logging observations for your records.

Bruce needs help. He has developed several titles for NAG but he does not plan to present every month. Please contact him if you can help.

Observing Activities

Activities for June:

Link Observatory -

Second Link Campout June 7-9. Gates open 6:00 PM Friday.
Impromptu observing as sky conditions allow. Check Yahoo site for information.
Third Link Campout June 28-30. Gates open 6:00 PM Friday.
Impromptu observing as sky conditions allow. Check Yahoo site for information.

McCloud Activities–

McCloud Monthly Star Gaze June 15
Impromptu observing as sky conditions allow. Check Yahoo site for information.

Dark Sky Observing Site Information

We are able to go to the Link, Prairie Grass Observatories, and McCloud Nature Park at non scheduled times if they do not conflict with reserved activities:

The Link Observatory is open for observing during IAS functions held there from early Spring to late Fall. See our calendar of events on the website www.iasindy.org. Observing opportunities at non scheduled times are announced on the IAS Yahoo group and are generally scheduled by our telescope operators as weather permits.

For those interested in going to McCloud to observe, please call the park office 765 676 5437 before 4PM on the day you want to go out. They will give you permission to be there at night and make arrangements to turn off the lights.

For those interested in going to Prairie Grass Observatory for observing call Hoppe at 1-765-296-2753.

THE JUNE DEEP-SKY CHALLENGE

Bruce Bowman

Below please find a list of ten (10) objects to view this month. Those who complete the primary objects will receive a certificate via email and be recognized in the News and Views. We're also providing a challenge object to help push the limits of your observing skills. It's not necessary to successfully view the challenge object to receive the certificate; we only ask that you try.

Please complete the following list to receive the June certificate:

NGC5824 (globular cluster in Lupus)
NGC5897 (globular cluster in Libra)
NGC5566 (barred spiral in Virgo)
NGC5634 (globular cluster in Virgo)
NGC5746 (bright, edge-on spiral in Virgo)
NGC5466 (large globular cluster in Bootes)
NGC5689 (lenticular galaxy in Bootes)
NGC5866 (bright, lenticular galaxy in Draco)
NGC5907 ("needle" galaxy in Draco)
M101 ("Pinwheel Galaxy" in Ursa Major)

Challenge objects for June 2013: NGC5447 and NGC5462 in Ursa Major (either or both)

The above objects are located between 14 and 16 hours of right ascension and so are well-placed for evening viewing this month.

June evenings remain galaxy season, although the brightest objects in the Virgo Cluster have mostly moved west; so this month's list may be a little more difficult than our targets were in April and May. Some of the globular clusters in the Milky Way also begin to approach the meridian, providing a preview of the star-cluster bounty that's in store for us in July. We'll start south and work our way north.

Few Indiana astronomers do much viewing in Lupus, although NGC5824 is [theoretically] more than 15 degrees above our southern horizon. From sigma Librae -- at the base of the "Libra Diamond" -- pan 8 degrees further S to the prominent 5th-magnitude star HD132955. The globular cluster can be found about 25' to the SSE; look for a 9th-magnitude spot about 2' in diameter with a dense core. Return to our starting point and pan your scope 5 degrees to the NE to find NGC5897. This globular cluster is larger but more diffuse, look for a 5' spot that's about a half-magnitude brighter than

NGC5824.

NGC5566 is located about 6 degrees NE of tau Virginis. Its halo is faint, about 4x1' in size; but its core is quite bright, sporting a stellar nucleus. Those having access to large apertures should attempt the companion galaxies NGC5560 and NGC5569, located 5' to the NW and 4' to the NE, respectively. Nine degrees further SSE lies NGC5634, the only Milky Way globular cluster in Virgo. Pan two degrees due W of mu Virginis to find its 2' halo, slightly condensed and surrounded by an isosceles triangle of stars magnitudes 8-11. NGC5746 is located 20' WNW of the 4th-magnitude star 109 Virginis. Oriented nearly N-S, this edge-on spiral is bright and nearly 7' long, displaying a conspicuous central bulge. The magnitude 8.2 star SAO120633 can be found 5' to the NNW.

Continuing north, the "ice-cream cone" asterism of Bootes the Herdsman presents a couple of worthy targets. NGC5466 is a very large globular cluster that is nonetheless quite faint and diffuse. Located 3 degrees E of the brighter globular cluster M3, NGC5466 is about 6' in diameter, and the faint face of this Class XII globular shows some mottling and partial resolution in larger instruments. Those interested in the Astronomical League's globular cluster award should consider sketching this object. Fully 20 degrees further N, but still in Bootes, NGC5689 is a lenticular galaxy showing a prominent oval core and a faint stellar nucleus. NGC5866 and NGC5907 can be found just across the border into Draco. NGC5866 is a candidate for the long-lost Messier object M102 and is listed as such in some catalogs. Look for a bright lenticular galaxy about 2.5x1' in size elongated in the NW-SE direction. Its "needle galaxy" companion, less than 2 degrees to the NE, is a large, edge-on spiral about 9' long and less than an arc-minute wide. Oriented mostly N-S, large apertures will begin to show hints of a dust lane along NGC5907's western edge.

M101 is the great face-on "Pinwheel" galaxy in Ursa Major. From Mizar, follow a chain of four 5th-magnitude stars about 6 degrees east to find it. Despite being more than 25' in diameter, M101 has a reputation for being elusive; yet the core region, about 6x7' in size, should be easily visible under a dark sky. Our two challenge objects this month are HII emission regions within M101's spiral arms. There are several such "objects" having NGC designations within M101; a chart is available at http://www.ngcicproject.org/dss/n/5/n5457.jpg. You can view either or both of these regions, but please let me know what you did so I can put something appropriate on your certificate. As is typical for observing targets of this kind, crystal-clear skies on a moonless night will likely be necessary for detection.

If you complete this list prior to the end of June, contact Bruce Bowman to ensure you receive recognition. At this time only IAS members are eligible. Congratulations to the following eight (8) IAS members for completing the April challenge: Mike Birch, Phil Dimpelfeld, Fred Keller, Laura Keller, Steve McSpadden, Wayne McSpadden, Mike Newberg and Phil Rone.

FAQs ABOUT THE IAS DEEP-SKY CHALLENGE

Q: Do I have to use my own equipment?
A: No...although bringing and using your own telescope is strongly encouraged. Also keep in mind that the IAS has an equipment loaner program.

Q: Do I need to find the objects myself?
A: No. You need only make the observations. Conceptually, if we had 10 telescopes set up at a star party -- each trained on a different object -- you could just go from one to the other and become eligible.

Q: What do I need to submit to you to receive the award?
A: Just contact me and let me know that you completed the requirements for the month. You certificate will be emailed to you as a PDF file.

May Novice/Urban Observing Challenge
Phil Dimpelfeld

Novice/Urban Observing List – June 2013

Kappa Bootis, Double Star in Bootes, 14h 13.5m, +51° 47, mag = 4.6, 6.6, sep = 13.4"

Saturn, planet in Libra, 14h 21m, +11° 17', mag = 0.7, size = 19"

Pi Bootis, Double Star in Bootes, 14h 40.7m, +16° 25', mag = 4.9, 5.8, sep = 5.6"

Epsilon Bootis, "Izar", Double Star in Bootes, 14h 45.0m, +27° 04', mag = 2.5, 4.9, sep = 2.8"

Alpha Librae, "Zubenelgenubi", 14h 50.9m, -16° 02', mag = 2.8, 5.2, sep = 231"

Xi Bootis, Double Star in Bootes, 14h 51.4m, +19° 06', mag = 4.7, 7.0, sep = 6.9"

M5, Globular Cluster in Serpens Caput, 15h 18.6m, +02° 05', mag = 5.7, size = 17.4'

Delta Serpentis, Double Star in Serpens Caput, 15h 34.8m, +10° 32', mag = 4.2, 5.2, sep = 3.9"

Zeta Coronae Borealis, Double Star in Corona Borealis, 15h 39.4m, +36° 38', mag = 5.1, 6.0, sep = 6.3"

Aristoteles, first quarter Moon

Copernicus, last quarter Moon

Challenge Object:

Mu Bootis, Triple Star in Bootes, 15h 24.5m, +37° 23', mag = 4.3, 7.1/7.6, sep = 107"/2.2"

Congratulations to Jon Glen Renshaw, who completed the requirements of the Novice/Urban Observing List for the months of March and April!

Notes:

To qualify for the Novice/Urban Observing List, you must observe at least 6 of the objects. Members are encouraged to find these objects without the use of GoTo so that they become more familiar with the night sky.

If you successfully observe at least 6 of the objects, please contact Phil Dimpelfeld (philip.dimpelfeld@yahoo.com). Let Phil know how many of the objects you were able to observe. You will be e-mailed a certificate recognizing your accomplishment.

The Novice/Urban Observing List will include objects on the Moon. Users should look for a map of the moon to use to identify future features. The "Sky & Telescope Field Map of the Moon" is a good investment (shopatsky.com).

Al/Cor Observations
By Chris Cordell

Caldwell Program

Introduction

Welcome to the Astronomical League's new Caldwell Observing Program. While Charles Messier made a catalogue of faint fuzzy objects to be avoided when searching for comets, Sir Patrick Caldwell-Moore has made a catalogue of beautiful and interesting objects you should, literally, go out of your way to observe. Two of the obvious objects were never even given NGC designations. A letter from Sir Patrick (below) explains why and how he created the list at his home in Selsey, England, surrounded by his personal observatories.

The Caldwell List

The 109 objects on the list range from magnitude 1 through 13, and Declination +85° to -80°, so some diligence will be required. The benefits far outweigh any inconvenience, however, as you will be treated to many wonderful new sights to behold in the night sky, and maybe even make some new international observing friends along the way.

The Awards

The Caldwell List has been broken into two award categories; 70 objects, and the complete list of 109. Each award will consist of a certificate with Sir Patrick Moore's signature and photo, and an award pin. The pictures on the pins are two of Sir Patrick's favorites; the Cat's Eye Nebula, visible from the Northern Hemisphere, and the Tarantula Nebula, visible from the Southern Hemisphere.
We greatly appreciate Sir Patrick's support in bringing this observing program challenge to the Astronomical League. Thanks also to NASA for the Hubble Space Telescope image of the Cat's Eye Nebula (C6) and to the VLT for the image of the Tarantula Nebula in LMC (C103).

Rules and Regulations

To qualify for a Caldwell Award, you need to be a member of the Astronomical League, either through an affiliated club or as a Member-at-Large, and observe and record your observations on The Observers Guide - Deep-Sky Observation Form, or some similar form. This form has a place for description and drawing. Only one is required but the detail should be sufficient to convince your society's awards coordinator that you did in fact expend the time and effort to find and, hopefully, appreciate the reason that Sir Patrick selected the object for a place of honor on his list. A photo or CCD image may be added but cannot replace the visual observation. Any telescope or binoculars are acceptable, however, computer assisted and Go -To capabilities are not to be used.
This program has a pin and certificate for those who successfully complete all of the required activities. Once you have made the necessary observations and sketches, mail the **copies** of your logs to the Program Coordinator, along with your name, address, astronomy club or Astronomical League affiliation, e-mail, and phone number. Please do not send your original logs, as they will not be returned. Upon verification of your observations, your certificate and pin may be forwarded either to you or the Indiana Astronomical Society Awards Coordinator, for presentation, as you so choose.

For Observing Manual and Object List details, access: www.astroleague.org, click on the "Observe" tab at the top of the home page, and select "Clubs by Experience Level". The Caldwell Program is listed in listed in the Intermediate section.

IU Kirkwood Observatory Bloomington

The Kirkwood Observatory Solar Telescope is open on the "First Saturday" of each month from 1-3 PM. Viewers may even be able to see a solar prominence or two, weather permitting. Updated weather conditions and closings will be posted at the Kirkwood Observatory Hotline at (812) 855-7736, and at the Observatory webpage, http://www.astro.indiana.edu/kirkwood.shtml.

Monthly openings of the solar telescope are planned for the first Saturday of each month during our 2013 observing seasons. And if you want to follow the Sun in between our monthly Solar Telescope openings, the website www.spaceweather.com provides daily updates.

Kirkwood Observatory on the IU campus is open each Wednesday evening from Spring Break until mid-November, weather permitting! Join us for a night of observing the night sky with the Kirkwood 12" refractor. Please visit our schedule at http://www.astro.indiana.edu/kirkwood.shtml, for a list of dates and times.

For updated weather conditions and closings, please call the Kirkwood Observatory Hotline at (812) 855-7736.

NASA Space Place

Triple Treat

By Dr. Ethan Siegel

The solar system is a busy place, with five wandering planets visible to the naked eye alone. When any two pass close by each other from our point of view, we see an astronomical *conjunction*, but on very rare occasions, three planets will find themselves grouped together: a *triple* conjunction. Towards the end of May, Mercury, Venus and Jupiter will treat us to the best triple conjunction in years.

On May 25th, Mercury will pass within 1.4° of Venus, then two days later Mercury comes within 2.4° of Jupiter, and finally on the 28th, Jupiter and Venus approach within 1° of one another. If it weren't for the slight orbital tilt of our solar system's planetary orbits, these conjunctions would all be *occultations* instead. During the nights of May 26th-27th, all three planets are visible immediately after sunset within the same 3° field of view, with the triple conjunction peaking in a triangular shape on the 26th. (For scale, the full Moon subtends about 1/2°.) The three planets appear close together for a few days more, making a line in the sky on the 30th/31st.

How does this happen? Mercury and Venus race around the Sun far faster than Earth, with Mercury completing more than four revolutions around the Sun for each one that Earth makes. At the same time, Jupiter is far slower, taking 12 years to orbit just once around the Sun. Jupiter's been high in the sky during the early parts of the night, but steadily lowers throughout May as Earth continues to move away from it, approaching its maximum distance from Earth. Mercury and Venus, meanwhile, begin to move out from behind the Sun during May: Venus at the beginning of the month and Mercury in the middle.

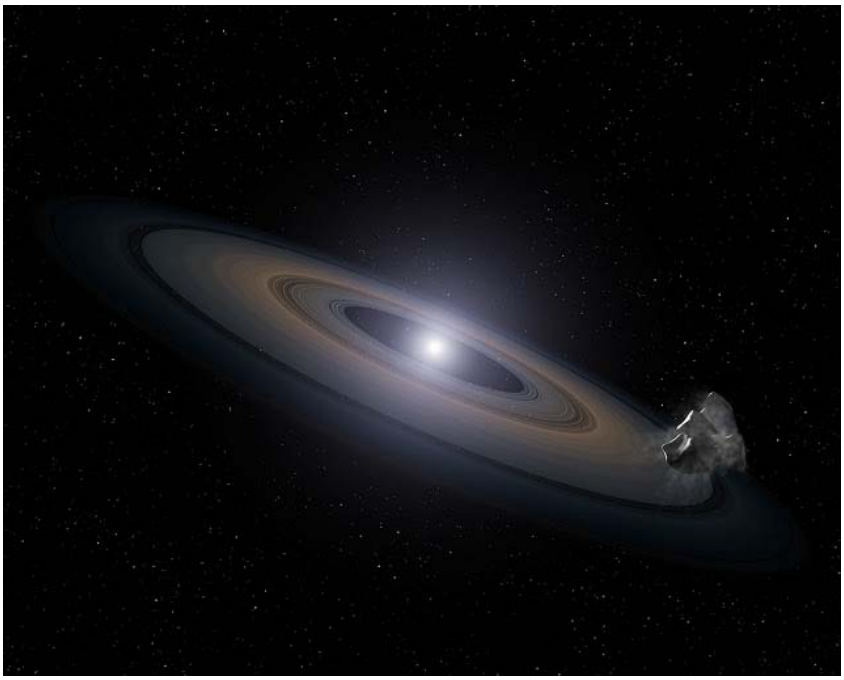
Thus, during this triple conjunction, *all three* planets will be on the far side of the Sun, something that happens just 25% of the time in triple conjunctions involving Mercury and Venus! If you telescopically resolve these planets into disks, you'll see our inner worlds in a nearly-full gibbous phase. Jupiter will appear largest in terms of angular diameter, followed by Venus and lastly by Mercury. Just a year ago, during its now-famous transit, Venus took up more than a full arc-minute in the sky; during this conjunction, it will just *one-sixth* that angular size and less than a third the apparent diameter of Jupiter. Nevertheless, Venus will still be more than **six times** as bright as Jupiter during this time, outshining all night-sky objects other than the Moon. Closer conjunctions of two naked-eye planets are frequent, but getting three or more like this happens just once or twice per decade, so don't miss your chance to see it.

And speaking of occultations, The Space Place has a great kid-friendly explanation of the Venus transit and solar eclipses of 2012 at spaceplace.nasa.gov/Venus-transit.

Dr. Ethan Siegel, a theoretical astrophysicist, is a professor at the University of Portland (OR) and Lewis & Clark College.

The image shows the configuration of Mercury, Venus, and Jupiter in the western sky just after sunset on May 26, 2013. Insets show the relative size appearance of the planets on that date.

AAVSO Writer's Bureau



This is an artist's impression of a white dwarf (burned-out) star accreting rocky debris left behind by the star's surviving planetary system. It was observed by Hubble in the Hyades star cluster. At lower right, an asteroid can be seen falling toward a Saturn-like disk of dust that is encircling the dead star. Infalling asteroids pollute the white dwarf's atmosphere with silicon. Credit: NASA, ESA, and G. Bacon (STScI)

NASA's Hubble Space Telescope has found the building blocks for Earth-sized planets in an unlikely place, the atmospheres of a pair of burned-out stars called white dwarfs. The dwarfs are being polluted by asteroid-like debris falling onto them. This discovery suggests that rocky planet assembly is common in stars, say researchers.

The white dwarfs reside 150 light-years away in the Hyades star cluster, residing in the constellation Taurus the Bull. The cluster is relatively young, only 625 million years old.

Hubble's spectroscopic observations identified silicon in the white dwarfs' atmospheres, a major ingredient of the rocky material constituting Earth and other terrestrial planets in our solar system. The silicon may have come from asteroids that were shredded by the white dwarfs' gravity when they veered too close to the stars. The rocky debris likely formed a ring around the dead stars, which then funneled the material onto the stellar relics.

The material detected whirling around the white dwarfs suggests that terrestrial planets formed when these stars were born. After the stars collapsed to white dwarfs, surviving gas-giant planets may have gravitationally perturbed members of any leftover asteroid belts into star-grazing orbits.

"We have identified chemical evidence for the Lego building blocks of rocky planets," says Jay Farihi of the University of Cambridge in England, lead author of a new study that appeared in the May 2 issue of the Monthly Notices of the Royal Astronomical Society. "When these stars were born, they built planets, and there's a good chance they currently retain some of them. The material we are seeing is evidence of this. The debris is at least as rocky as the most primitive terrestrial bodies in our solar system."

Astronomers commonly believe that all stars formed in clusters. But searches for planets outside our solar system have only detected a handful of them orbiting cluster stars. Farihi suggested that it may be

harder to make the precision measurements needed to find extrasolar planets in clusters because the stars are young and more active, producing stellar flares and other outbursts.

The team, therefore, searched planets around retired cluster stars. "Using Hubble to analyze the atmospheres of white dwarfs is the best method for finding the signatures of solid planet chemistry and determining their composition," Farihi explains. "Normally, white dwarfs are like blank pieces of paper, containing only the light elements hydrogen and helium. Heavy elements like silicon and carbon sink to the core."

Besides finding silicon in the Hyades stars' atmospheres, Hubble also detected low levels of carbon, another sign of the debris' rocky nature. Astronomers would expect carbon to be depleted or absent in rocky, Earth-like material. Carbon is a key element that helps astronomers determine the properties and origin of the planetary debris raining down onto white dwarfs. It leaves fingerprints only in ultraviolet light, which cannot be observed from ground-based telescopes. Finding its chemical signature required Hubble's Cosmic Origins Spectrograph (COS).

"The one thing the white dwarf pollution technique gives us that we just won't get with any other planet-detection technique is the chemistry of solid planets," Farihi says. "Based on the silicon-to-carbon ratio in our study, for example, we can actually say that this material is basically Earth-like. If you put this stuff into the hand of a child, or an adult, and you ask them, `What is this?' Any human being would be able to respond, 'It's a rock!' They wouldn't need to be a scientist. They would know exactly what it is, as it's something familiar to all of us."

Farihi suggests that asteroids less than 100 miles (160 kilometers) across were probably gravitationally torn apart by the white dwarfs' strong tidal forces. The pulverized material may have been pulled into a ring that eventually fell onto the dead stars. "It's difficult to imagine another mechanism than gravity that causes material to get close enough to rain down onto the star," he says.

The team estimated each asteroid's size by measuring the amount of dust being gobbled up by the dead stars, about 10 million grams per second, equal to the flow rate of a small river. They then compared that data with measurements of material falling onto other white dwarfs.

The Hyades study offers insight into what will happen in our solar system when our Sun burns out 5 billion years from now. When the Sun exhausts its hydrogen fuel, it will puff up to a red giant and swallow Mercury and Venus, and perhaps the Earth. As the Sun begins to eject its outer layers, it loses mass. The balance of gravitational forces between the Sun and Jupiter changes, disrupting the main asteroid belt. Some of these asteroids could veer too close to the Sun, which breaks them up. The debris could be pulled into a ring around the dead Sun, similar to the inferred rings around the Hyades white dwarfs.

The two "polluted" Hyades white dwarfs are part of the team's search of planetary debris around more than 100 white dwarfs, led by Boris Gänsicke of the University of Warwick in England. Team member Detlev Koester of the University of Kiel in Germany is using sophisticated computer models of white dwarf atmospheres to determine the abundances of various elements that can be traced to planets in the COS data.

The team plans to analyze more white dwarfs using the same technique to identify not only the rocks' composition but also their parent bodies. "The beauty of this technique is that whatever the universe is doing, we'll be able to measure it," Farihi said. "We have been using our solar system as a kind of map, but I don't know what the universe does. Is there another recipe for Earth-like or habitable planets? The chemistry can tell us. Hopefully, with Hubble and its powerful ultraviolet-light camera COS, and

with the upcoming ground-based 30- and 40-meter telescopes, we'll be able to tell a story. We hope to create a picture of hundreds of rocky planet building blocks and tell how often they look like Earth and how often they look different, or even exotic. Who knows, maybe we'll find some stuff we haven't thought of yet."

Public Outreach Programs – To schedule a program at the Link Observatory or at your site, please contact the following people:

Public Outreach Programs: To schedule a public event contact Gerald Venne via our webpage at: www.iasindy.org. Place your cursor on the "Home" tab and select "Contact Us" on the pull down menu. You will find a link to Gerald's email

To schedule the Goethe Link Observatory, contact John Shepherd via the webpage www.iasindy.org. Place your cursor on the "Home" tab and select "Contact Us" on the pull down menu. You will find a link to John's email

Astro Ads

Are you changing or upgrading your equipment? Do you have or are you looking for astronomical materials and equipment? The Indiana Astronomical Society as a service to its members, will publish non-commercial ads at no charge. The ad will stay in the Newsletter for 4 months and may be renewed at the owner's request.

To place an ad, contact:
Newsletter Editor
Jeff Patterson
1780 S. Morgantown Rd.
Greenwood, IN 46143
(317) 300-0449
E-Mail: KB9SRB@Hotmail.com

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Equipment Loan Program

The Loan Program has been helpful to those new to the hobby and others in need of observing equipment.

Did you know you could borrow a scope or piece of astronomy equipment from the Society and take it for a test drive? The Society has a program where members who are trying to determine what kind of equipment to buy can borrow one of the Society's scopes for a month or two and see how they like it. Philip Dimpelfeld is the chairman of the program and can arrange for your pickup and training on the use of the particular instrument. This is a great way to see what telescope you want to purchase. We have several scopes, eyepieces and binoculars to loan.

We will consider donations of equipment that are appropriate for this program. The IAS is classified as a public charity und ther section 509(a)(2) of the internal revenue code. We will be happy to provide you with an acknowledgement of your gift. Please contact our equipment loan coordinator via email at: equipment@iasindy.org

2013 Calendar of Monthly Meetings

Month	Board	General	NAG	McCloud
January	8	12	12	
February	5	9	9	
March	5	9	9	
April	2	6	6	20
May	28	June 1	June 1	18
June	25	29	29	15
July	23	27	27	13
August	27	31	31	17
September	24	28	28	14
October	22	26	26	12
November	19	23	23	
December	None	TBA		

Membership Status Report

The following is the May 2013 status of membership as of 5/22/13:

Total Membership: 159

Renewals: **7**

New Members:
David Dildine Indianapolis, IN
Kara Broering

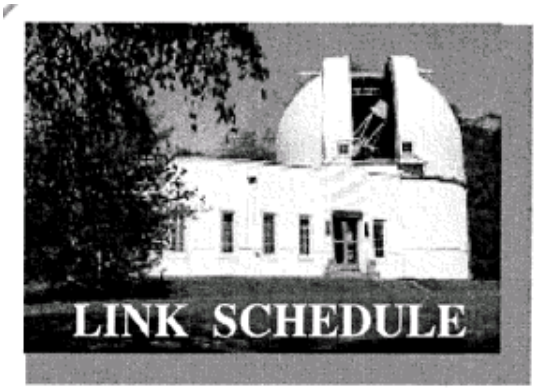
Member moved to inactive status:
Ray Marquette - Indianapolis, IN

Goethe Link Observatory

Observatory Address

Goethe Link Observatory
8403 N. Observatory Lane
Martinsville, IN 46151

Latitude: 39 degrees, 33 minutes north
Longitude: 86 degrees, 24 minutes west
Phone: (317) 831-0668



This schedule is being published to assure proper access to the Link Observatory for programs that are designed as observational, general education, astronomy conferences, or amateur research projects. Training programs are tentatively scheduled for Saturday evenings only. Although other requests can over-ride these sessions. It is the purpose of this listing to prevent activity conflicts.

If you need to acquire use of the 36-inch telescope: remember two important IAS guidelines: 1) *There must be a telescope operator and assistant available* 2) *contact the Observatory Manager: John Shepherd for scheduling* **via the webpage iasindy.org under the contact us section**. DON'T WAIT UNTIL THE LAST MINUTE TO MAKE YOUR REQUEST OR YOU MAY NOT GET ACCESS.

IAS News & Views Monthly Newsletter for the IAS

Accessing the IAS News &Views
The current Newsletter can be found on the website www.iasindy.org

The monthly newsletter welcomes articles of local astronomical interest information and want ads: Please submit to
The Indiana Astronomical Society, Inc
Jeff Patterson, editor
1780 S. Morgantown Rd
Greenwood, IN 46143
Phone: (317) 300-0449
KB9SRB@hotmail.com

Membership information Contact via the webpage iasindy.org under the contact us section
Contact any IAS officer or the Treasurer.

Pay Your Dues by PayPal

We can now pay dues on our website using Paypal. There is a cart system where you can pay dues, order magazines, or donate to the Society. The cart is found in the Join the Society section of the website. You will have to establish a PayPal account for yourself to make the transactions.

Requests for Information

You may contact our officers, Board members, and Coordinators via our website at www.iasindy.org. Place your cursor on the "Home" tab and then select "Contact us". You may then page down to the person you desire to contact and send an email message requesting information or a telephone call back. We will be happy to respond within a reasonable time frame.

Logo Clothing

The Board has developed a new supply of logo ware with our new logo using Mid Central Trophy in Kokomo, IN. Typically T shirts, sweatshirts, polo shirts, and caps are available. Now we are even making it easier for you. We have changed our method of order so that you can have better service. Call Linda, tell her this is an order for the IAS logo ware, discuss what you want and give her the size. She can determine the cost and shipping and mail the order to your home directly.
Linda
Mid-Central Trophy
422 Arnold Ct
Kokomo, IN 46902
765-453-5494
All Major credit cards are accepted.
Hours 9-5 EST

June Calendar, 2013

For a more detailed Calendar of Events see the webpage www.iasindy.org

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		28 **Board Meeting 7PM**	**29**	**30**	**31**	**1** **Public Lecture 8 PM Link Observatory**
2	**3** AAS Observing 9PM Conference Center Plaza	**4** AAS Observing 9PM Conference Center Plaza	**5**	**6**	**7** IAS Campout at Link	**8** IAS Campout at Link **New Moon** ●
9	**10**	**11**	**12**	**13**	**14**	**15** **McCloud Star Gaze**
16 1st Qtr ☽	**17**	**18**	**19**	**20**	**21**	**22**
23 **Full Moon** ○	**24**	**25** **Board Meeting 7PM**	**26**	**27**	**28** **3rd QTR** ☾ Campout at Link	**29** **Public Lecture 8 PM Link Observatory** Campout at Link
30 **3rd QTR** ☾ Campout at Link						