



The IAS News & Views

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www.iasindy.org

Indiana Astronomical Society/Link Observatory Public Lecture

June 29, 2013

8:00 PM

Goethe Link Observatory

Observation Planning

Jeff Patterson

Have you ever gone out to observe, got set up, and asked now what am I going to look at? One tends to go to the Messier objects or the objects we know and by the end of the evening, we have seen nothing new. Bruce and Phil have solved that somewhat by having a monthly observing lists. Now how do you find the objects? One can use an atlas or The Sky or some other planetarium package. I use a multitude of packages. I will discuss The Sky, Astroplanner and ST3 programs with their planning and logging features.

IAS NEWS

From the President's Desk

Many thanks to all who participated in the observing session at the convention center plaza for the American Astronomical Society. The membership and staff of the AAS were very appreciative of our efforts and gave us favorable reviews in the press. My compliments to Doug Brown, who did a great job of organizing this venue and to those of you who took the time and effort to get there.

Our next meeting at Link Observatory at last quarter moon occurs on 29 June, rather than in early July due to the drift in the moon's phases. We have scheduled a campout on 28 & 29 June to coincide with the general meeting. Let's hope we have clear skies this time around. The following meeting will be held on July 27th.

Tom Borlik and I will host a tour of the Link Observatory for the Morgan County Historical Society on June 26th.

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With the help of the IU Physical Plant, we have cleared several trees that were blocking the observing field view of the southern sky and Link's view to the north-east. Many thanks to Eric Allen for his suggestion that we start on this project. There is much more work to be done as there are more trees that need to come down on both sides of the observatory.

Recent Events for the IAS

Observing at IMA

Thank you to volunteers Bill Conner, Doug and Betsy Brown, John Molt, Mike Newberg and Mary Venne for joining me and the Indianapolis Museum of Art in what proved to be a very successful public observing program last night at the museum's 100 Acre Park. Lindsay Hamman, the Program Support Specialist for the museum, estimated attendance at 60 - 70 (with some arriving and leaving during the event). Highlights of the evening were the planetary conjunction of Mercury, Venus and Jupiter and, following that; Saturn. The conjunction was viewable for about half the time (if you were situated to take advantage of breaks in the trees) and was visible in one field of view through my 10x50 binoculars. The planets were recognizable though fuzzy disks, especially Jupiter; but still appreciated by the attendees. Saturn was the real "Wow!" that captivated everyone. High and bright, it showed well after the muck of viewing the conjunction.

As the first planned event at the 100 Acre Park to actually occur (others had to be cancelled due to weather), everyone was pleased it did so well and look forward to more in the near future. Thanks again to those who made it possible.

Gerald Venne
IAS Public Events Coordinator

I know others will chime in but I just wanted to say what a great event we had tonight. The atmosphere was very soupy and the conjunction disappeared quickly behind the treeline but the night was saved by mighty Saturn which gave plenty of "Ooohs", "Aaahs" and "WOW!"s. Folks, if you've never done so, please consider attending a public-outreach event. Sure it's nice to get together with fellow astronomers on viewing nights but there's something to be said for sharing our love of the night sky with everyday people who don't get to see these things as much as we do. In some ways I think we just get used to observing the same objects but, for the general public, it's a whole new experience. John Molt said it very well tonight: "It wasn't necessary for me to be here but it was fun just talking to the people". I couldn't agree more. Kudos to Gerald who did a terrific job coordinating the event and kicking off the evening with a quick introduction. A fun night. I took a few pictures and will post them soon. Mike Newberg

John Molt Demonstrates his SC



AAS Convention Public Observing

I thought we had a great time Monday night with the AAS Convention. Everyone seemed to enjoy themselves and the Convention Center Plaza worked well as a meeting place and observing site. Excellent weather conditions, despite the extreme light pollution, allowed for good views of Saturn. We looked at some other objects such as double stars and even a few deep sky faint "smudges". We had a number of convention attendees looking through our scopes, with some of them staying until well after 11pm.

IAS attendees were: Bill Conner, Bruce Bowman, Rick Betuker, John Cramer, Phil Dimpelfeld, Mike Newberg, Shashi Penumathy, George Petzen, Jim Zdobyak, Doug and Betsy Brown.

I really appreciated how members stepped up to help out at the last moment when we needed more scopes. Thanks to all who helped out last night.

Doug

Epsilon Lyrae barely showed as a double double.

Thanks to all who showed up. In a way the IAS was in the national spotlight with the AAS convention and we hit a grand slam with our participation. Everyone was really impressed!

Mike

Astronomers Bring Stars to Indianapolis in Public Skywatching

Event

by Miriam Kramer, SPACE.com Staff Writer

Date: 10 June 2013 Time: 02:23 PM ET

[inShare](#)



Astrophotographer Scott MacNeill sent in this image of Saturn and moons: Titan (left), Tethys (top center), Dione (mid center), Rhea (bottom center), and Enceladus (right). He took the image from the Frosty Drew Observatory in Charlestown, R.I on May 18, 2013.

CREDIT: Scott MacNeill

[View full size image](#)

Astronomers from around the world put the stars and planets on display for the people of [Indianapolis](#) last week.

For the first time, the members of the [American Astronomical Society \(AAS\)](#) hosted events specifically geared toward people from all walks of life during the society's 222nd meeting last week. Scientists teamed up with amateur astronomers from the Indiana Astronomical Society to set up telescopes outside of the Indiana Convention Center in downtown Indianapolis on June 3.

Astronomers and members of the public mingled and peered through about 10 telescopes aimed at Saturn as it rose in the night sky. "Saturn really captures people's imaginations," one AAS member said to another during the event. [[See Amazing Night Sky Photos by Stargazers](#)]

Public Star Watches from a Novice's Eyes

The observing event at the AAS was my first time at a public star gazing event. Here are some observations and lessons learned that perhaps newbies like me might find useful:

1. Ignorance is a poor excuse to not participate: If you're like me (< 1.5 years into this hobby) and can't look up and immediately know where Saturn is, for example, that is **still** not a good reason to stay away. Show up anyway, with whatever equipment you have, be ignorant, ask stupid questions. My first question to Mike was "which way is south?" You will learn a lot more than you will by struggling alone in the backyard.

2. Memorize some basic facts: The most common question I heard by far from lay people was: "How far is it?" It helps to answer in terms of easily graspable units like AUs ("it's 6 times as far away from us as we are from the sun) instead of light years. Others were curious about Saturn's moons or colors they were seeing. Thankfully there were enough astronomers around to answer them this time!

2. Don't forget: Bring a table to set stuff down, an observing chair and a tarp in case the ground's going to be wet. I forgot all three and Bill was kind enough to let me use his table. The people who showed up didn't mind stooping to look through my scope, but they would have spent more time at the eye piece if it were more comfortable.

3. Extra equipment is probably useful: I threw stuff into the car without planning so here's what I had: the scope in the original box, finder scope, telrad, 40mm and 25mm eyepieces in bubble wrap, 15x70 binocs, a "home repair" toolbox, a jump start battery pack for the car, a Hotech collimator, a Ravelli tripod with binocs adapter, extra batteries, a battery charger, an astronomy laser pointer, a copy of Nightwatch, a planisphere and a red flash light.

Waste of space, you say?

Here's what happened: I realized my scope was disassembled **after** I started setting up so I needed the toolbox. The collimation was off and needed the Hotech (so did Bill). A girl who showed up at the star party with a Galilean scope she'd assembled but didn't have a mount for was able to use my tripod. George was able to use the battery pack. Jason (with the jealousy-inducing obsession) helped me star hop to M13 from the big dipper using the laser pointer. And several people were able to use the planisphere. As for the flash light? Well the AAS photographer was having trouble getting his camera to focus in the dark. Guess what helped? Yep, shining a red flash light on the subjects. If you've got something useful, someone else, if not you, can probably put it to good use.

4. Please DO touch: It's a bit scary to let random folks touch our scopes, but if we're going to get the average person on the street (especially kids) get interested in science, we have to let them experience it fully. So what if your Dob goes out of focus or Saturn is way out of the FOV? Tell people it's totally ok, explain why they might not want to lean on the scope, relocate your target and refocus (or even better let them do it), it's good practice.

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If you're new to the hobby I can't imagine a better way to increase your skills and confidence. Hope to see many of you at McCloud!

Shashi

Note: Sashi is a new member to the IAS and is relatively new to the hobby. Brings to mind the times I have left a vital part at home. Once I set my GEM up for the scouts and discovered that I had left my weight bar at home. Had the weights.

Observing at Link

The Link campout was a wash this month. It was too cloudy Friday night and was called ahead of time. Tonight, around dusk, the sky was kind of clear but rather murky anywhere near the horizon. When I arrived at 9:30, everyone was in the dome and no scopes were set up out back. As often happens, we also had a goodly contingent of visitors who had dropped in for a tour of the facility.

Around the time it got dark enough to begin to see stars, Frank and I went out to his truck to check out a new Martin guitar he had bought. Meanwhile, the rest of the crew aligned the 36" on Spica and Arcturus. Immediately after alignment it started to cloud up. Visitors were given priority and some folks got to see Saturn. I was not one of them.

Our visitors left shortly after that. We made sure they signed the log, got some of the IAS "business" cards, and encouraged them to come again in three weeks. After about an hour of additional waiting for the sky to clear the rest of us gave up, too. If nothing else, Mike and Wayne got in some more practice with the scope, so I wrote it up as such in the training log.

IAS members present were Wayne and Steve McSpadden, Fred and Laura Keller, Frank Hunter, Mike Birch and myself. On the premise that an IAS event that didn't quite come off is still news, attached is a photo for the newsletter. [Mike and Frank with guests]

Bruce

McCloud Monthly Star Gaze June 15

The McCloud Star Gaze was a washout again. The skies have been just horrible this summer.

Upcoming Public Events

**IAS/Holcomb Observatory Program Planning Meeting--7:00 PM, June 25,
Holcomb Observatory**

IAS/Link Observatory General Meeting June 29 8:00 PM Link Observatory

McCloud Monthly Star Gaze July 13, 8:30PM. McCloud Nature Park

IAS/Holcomb Observatory Program Planning Meeting—7:00 PM, July 23, Holcomb Observatory

IAS/Link Observatory General Meeting July 27 8:00 PM Link Observatory

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.

Observing Activities

Activities for June and July:

Link Observatory -

Third Link Campout June 28-30. Gates open 6:00 PM Friday.
Link Campout June 26-28. Gates open 6:00 PM Friday.

Impromptu observing as sky conditions allow. Check Yahoo site for information.

McCloud Activities—

McCloud Monthly Star Gaze July 13

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 JULY 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 July certificate:

NGC6229 (class IV globular cluster in Hercules)

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NGC6293 (class IV globular cluster in Ophiuchus)
NGC6284 (class IX globular cluster in Ophiuchus)
NGC6316 (class III globular cluster in Ophiuchus)
NGC6304 (class VI globular cluster in Ophiuchus)
NGC6356 (class II globular cluster in Ophiuchus)
NGC6144 (class XI globular cluster in Scorpius)
NGC6441 (class III globular cluster in Scorpius)
NGC6453 (class IV globular cluster in Scorpius)
NGC6440 (class V globular cluster in Sagittarius)

Challenge object for July 2013: NGC6426

The above objects are located between 16 and 18 hours of right ascension and so are well-placed for evening viewing this month.

Globular clusters are compelling objects. There's just something about seeing that many stars in one place that I find captivating. I was first attracted to astronomy after viewing M22 through a friend's 8" scope. They vary greatly in brightness, degree of concentration, and number of stars. Some are reddened by intervening dust clouds.

They are very old, and form a halo around the center of the Milky Way. By mapping their distribution, Harlow Shapley determined the general location of the galactic center almost a century ago.

July evenings are awash with globular clusters, many of them Messier objects. We're going to tour some of the brighter, *non*-Messier globular clusters. Consider this a starting point toward the Astronomical League's globular cluster award. View these 10 objects, plus the 29 globular clusters in the Messier catalog, and you're already 78% done! Be sure to get the program booklet and record all required information, including your estimate of the Shapley-Sawyer concentration class. Classes I-II, the most highly concentrated globulars, tend to be easier to see; while Class XI-XII clusters are diffuse and often quite challenging.

In Hercules, NGC6229 is often overlooked in deference to the two Messier objects in this constellation. Look for a bright core with a mottled halo about 3' in diameter. A pair of 8th-magnitude stars are located 5' west and 5' southwest of this cluster, which makes for an interesting field. William and Caroline Herschel erroneously listed this object as a planetary nebula when compiling their General Catalog. Nobody's perfect!

Ophiuchus is definitely globular country, and at 8th magnitude NGC6293 is among the brighter ones. The core is tight, but stars around the edge of the 3' halo show some resolution. This object is readily found about 1-1/2 degrees west of the 4th-magnitude double 36 Ophiuchi. Move another 2-1/2 degrees to the north-northwest to locate NGC6284. The 2' halo, slightly elongated in position angle 110, has irregular edges while the core is nearly stellar. Being class IX, this cluster will be more difficult to spot (those looking for an easier diversion can find M19 two degrees to the south). Return to 36 Ophiuchi and move two degrees south of that star to find NGC6316, a cluster of similar brightness but higher concentration. Although relatively easy to detect, I find NGC6316 hard to resolve. It is surrounded by five field stars of magnitudes 11-12. By panning another two degrees further south one should stumble across NGC6304, a globular cluster that is both a little brighter and a little easier to resolve than the previous two.

Eleven degrees to the north -- but still in Ophiuchus -- lies NGC6356. This is a very nice cluster, nearly as bright as its neighbor M9. My astro-notes actually say "this should have been a Messier object." The highly condensed core of this Class II globular makes it a conspicuous target, but you'll

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find individual stars somewhat difficult to resolve in its small, 2' halo.

Scorpius contains its share of globular clusters, too. At 11th magnitude and class XI, NGC6144 can be a challenge. Pan your scope about 40' northwest of Antares to find its diffuse, 3' halo. The faint glow of the cluster is in stark contrast to the intensity of the neighboring red giant star. I've successfully detected this object in scopes as small as 6", but you'll have better chances with scopes of 8" or larger (if you get too frustrated with it, take a side trip to M4). At magnitude 7, NGC6441 is easily found about 4' due east of the orange giant star G Scorpii. You will need a good southern horizon, though. The 3' halo displays a dense, brilliant core; and a 10th-magnitude field star nearly touches the southwest edge. NGC6453 lies among the northwestern outliers of the large "Ptolemy cluster," Messier 7. Its halo is about 2' in size, shows little central condensation and no resolution in the scopes that I have used on it.

There are many globular clusters in Sagittarius but we'll save most of them for next month. Our lone exception is found about 4 degrees northwest of the famous Trifid Nebula. NGC6440 can be found 5' west of a 10th-magnitude field star. Look for a diffuse 2' halo that brightens to a small core. The 13th-magnitude planetary nebula NGC6445 -- another 20' due north -- is also worth checking out.

Our challenge object is a Class IX globular cluster in central Ophiuchus. Although brighter than 11th magnitude, this object can be a puzzle. NGC6426 plots out about 10' of arc too far south in some catalogs (the CNGC database in my LX200 suffers from this). Accurate coordinates are right ascension 17h 44m 55s and declination +03deg 10' 13" (J2000). Look for a diffuse haze about 4' in diameter; those owning large apertures might even see a few individual stars. 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 July, contact Bruce Bowman to ensure you receive recognition. At this time only IAS members are eligible. Congratulations to the following nine (9) IAS members for completing the May challenge: Eric Allen, Roberta Allen, Mike Birch, Fred Keller, Laura Keller, John Shepherd, Steve McSpadden, Wayne McSpadden, and Mike Newberg. The last three members listed above also successfully viewed the challenge object NGC4236 with the aid of the 36" telescope at Link.

FAQs ABOUT THE IAS DEEP-SKY CHALLENGE

Q: Do I have to use my own equipment?

A: No...although using your own telescope is strongly encouraged. Also keep in mind that the IAS has an equipment loan 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 let me know that you completed the requirements for the month and whether you were also successful in detecting the challenge object. Your certificate will be emailed to you as a PDF file.

July Novice/Urban Observing Challenge

Phil Dimpelfeld

Novice/Urban Observing List – July 2013

Beta Scorpii, Double Star in Scorpius, 16h 05.4m, $-19^{\circ} 48'$, mag = 2.6, 4.9, sep = 13.6"

Sigma Corona Borealis, Double Star in Corona Borealis, 16h 14.7m, $+33^{\circ} 52'$, mag = 5.6, 6.6, sep = 6.2"

16/17 Draconis, Triple Star in Draco, 16h 36.2m, $+52^{\circ} 55'$, mag = 5.4, 6.4, 5.5, sep = 3.4, 90

M13, Globular Cluster in Hercules, 16h 41.7m, $+36^{\circ} 28'$, mag = 5.7, size = 17.0'

Alpha Herculis. Double Star in Hercules, 17h 14.6m, $+14^{\circ} 23'$, mag = 3.5, 5.4, sep = 4.7"

M92, Globular Cluster in Hercules, 17h 17.1m, $+43^{\circ} 05'$, mag = 6.4, size = 11.0'

Rho Herculis, Double Star in Hercules, 17h 23.7m, $+37^{\circ} 09'$, mag = 4.6, 5.6, sep = 4.1"

IC 4665, Open Cluster in Ophiuchus, 17h 46.3m, $+05^{\circ} 43'$, mag = 4.2, size = 70.0' (BIG!)

Messier and Messier A, craters on the Moon (first quarter) – see Astronomy Picture of the Day for June 8, 2013

Sinus Iridum, last quarter Moon

Challenge Object:

NGC 6210, Planetary Nebula in Hercules, 16h 44.5m, $+23^{\circ} 49'$, mag = 8.8, size = 48"

Congratulations to the following for completing the Novice/Urban List for May 2013:

- Jon Glen Renshaw
- Eric Allen
- Roberta Allen

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).

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

High-Energy Spy

By Dr. Martin C. Weisskopf

The idea for the Chandra X-Ray Observatory was born only one year after Riccardo Giacconi discovered the first celestial X-ray source other than the Sun. In 1962, he used a sounding rocket to place the experiment above the atmosphere for a few minutes. The sounding rocket was necessary because the atmosphere blocks X-rays. If you want to look at X-ray emissions from objects like stars, galaxies, and clusters of galaxies, your instrument must get above the atmosphere.

Giacconi's idea was to launch a large diameter (about 1 meter) telescope to bring X-rays to a focus. He wanted to investigate the hazy glow of X-rays that could be seen from all directions throughout the sounding rocket flight. He wanted to find out whether this glow was, in fact, made up of many point-like objects. That is, was the glow actually from millions of X-ray sources in the Universe? Except for the brightest sources from nearby neighbors, the rocket instrument could not distinguish objects within the glow.

Giacconi's vision and the promise and importance of X-ray astronomy was borne out by many sounding rocket flights and, later satellite experiments, all of which provided years-, as opposed to minutes-, worth of data.

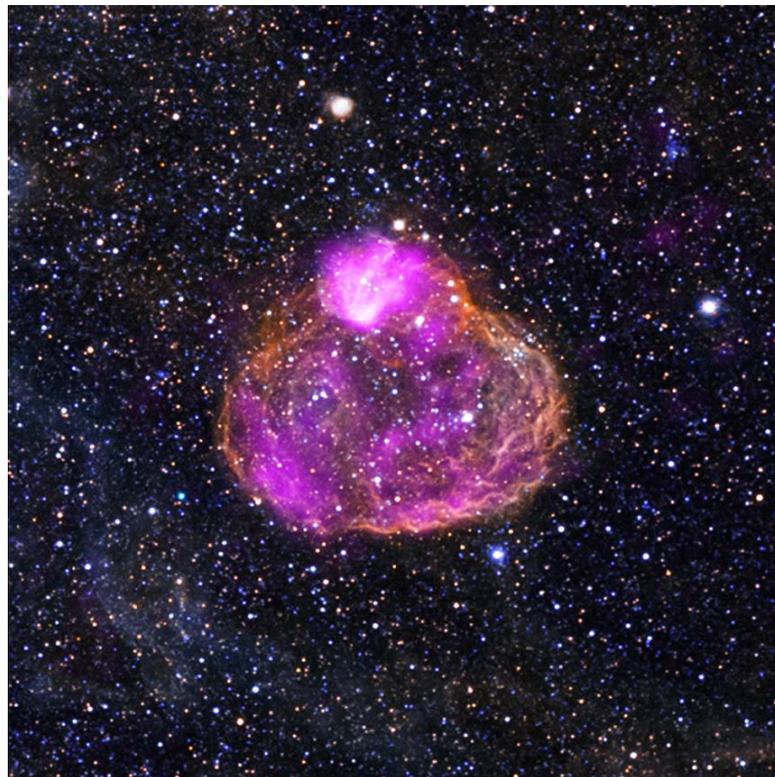
By 1980, we knew that X-ray sources exist within all classes of astronomical objects. In many cases, this discovery was completely unexpected. For example, that first source turned out to be a very small star in a binary system with a more normal star. The vast amount of energy needed to produce the X-rays was provided by gravity, which, because of the small star's mass (about equal to the Sun's) and compactness (about 10 km in diameter) would accelerate particles transferred from the normal star to X-ray emitting energies. In 1962, who knew such compact stars (in this case a neutron star) even existed, much less this energy transfer mechanism?

X-ray astronomy grew in importance to the fields of astronomy and astrophysics. The National Academy of Sciences, as part of its “Decadal Survey” released in 1981, recommended as its number one priority for large missions an X-ray observatory along the lines that Giacconi outlined in 1963. This observatory was eventually realized as the Chandra X-Ray Observatory, which launched in 1999.

The Chandra Project is built around a high-resolution X-ray telescope capable of sharply focusing X-rays onto two different X-ray-sensitive cameras. The focusing ability is of the caliber such that one could resolve an X-ray emitting dime at a distance of about 5 kilometers!
The building of this major scientific observatory has many stories.

Learn more about Chandra at www.science.nasa.gov/missions/chandra . Take kids on a “Trip to the Land of the Magic Windows” and see the universe in X-rays and other invisible wavelengths of light at spaceplace.nasa.gov/magic-windows.

Dr. Weisskopf is project scientist for NASA's Chandra X-ray Observatory. This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Composite image of DEM L50, a so-called superbubble found in the Large Magellanic Cloud. X-ray data from Chandra is pink, while optical data is red, green, and blue. Superbubbles are created by winds from massive stars and the shock waves produced when the stars explode as supernovas.

AL/Cor Observations

By Chris Cordell

Double Star Program

Introduction

Welcome to the Astronomical League's Double Star Program. The purpose of the Double Star Program is to introduce observers to 100 of the finest double and multiple stars in the heavens. You don't need a large, expensive apochromatic refractor to view the objects on this list since a small refractor, Newtonian reflector, or Schmidt-Cassegrain will do just fine. All objects on this list were originally observed with a three-inch refractor using between 75X and 150X. Again, this program is meant to allow you to enjoy a different aspect of our wonderful hobby, and not to test your equipment.

Double star observing can be very forgiving. You don't need the darkest skies, the clearest skies, or even a moonless night to observe many of these objects. Some can be observed from your backyard under moderate light pollution, some can be observed under less than transparent skies, and some can even be observed with the moon up. However, as usual in astronomy, the best results can be obtained under optimum conditions. The point is, always try for the best conditions, but if you don't have them, don't worry about it. You can still enjoy this program.

Rules and Regulations

To qualify for the AL's Double Star Certificate and [pin](#), you need only be a member of the Astronomical League, either through an affiliated club, as a Member-at-Large, or as an International Member-at-Large, and observe the 100 selected objects on the included list. Any telescope may be used, but one with an objective 60mm in diameter or larger is recommended. It is preferred that the stars be found by star hopping and not by Go-To methods, although I will not insist on this if the rest of the observations are well done. Too often I find the recording by those who use Go-To's is hurried and unclear.

I also encourage you to look at the stars with varying powers as some of these doubles are very close and require substantial power to get a clean separation of the stars. (Gamma Virginis, for instance, is currently separated by under an arc second and is expected to close to around 0.3 arc seconds around 2007. It may require more power and not everyone will be able to split it. Just do the best you can and report what you see.)

To record your observations, you may use the [log sheet](#) provided, or one with similar information. If you use your own log sheets, they should include: object, date, time, power, seeing, instrument, and a drawing of the double or multiple system. Yes, I said a drawing of the double star. Now, before you panic, how hard is it to draw two dots in the box provided, with the size of the dot indicating magnitude, and the distance between the dots representing separation? Please show North and either East or West in your drawing. A part of this exercise is to teach celestial directions so the position angles of the stars will be judged by your denotation of the directions. I have given you a line for a description, but this is optional and not required. I have included this so that if you are inspired by any one double star, you can write your thoughts or feelings down for later reference.

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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 Double Star Program is listed in the Beginner section.

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

For Sale: Starmaster 14.5 F4.3 Hybrid Truss "Go to" Dobsonian Telescope. Registered Zambuto mirror – never washed 1.6" thick for quick cool downs Cheshire Collimator system Two new Gel Cell 12 volt batteries with Charger Excellent condition, Bought new in 2003

Like new, Rarely used in the past 4 years

Always stored indoors

Custom wooden box for mirror

New cover for Truss unit

Scope Options (\$3000 plus) include:

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- Sky Commander Digital Setting Circle
- Sky Tracker GoTo tracking system
- 2" Feather Touch Precision Focuser
- AstroSystems DewGuard and wiring package

A 5-6 month wait for same scope from Starmaster today

Includes following accessories

- TeleVue ParaCorr
- Kendrick Laser Collimator
- Telrad Reflex sight
- Catsperch observing chair

Price: \$ 5500.00 firm

Direct cash purchase only

Email ldenglish32@gmail.com

Phone: [317-518-0601](tel:317-518-0601)

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 under 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 June 2013 status of membership as of 6/17/13:

Total Membership: 160

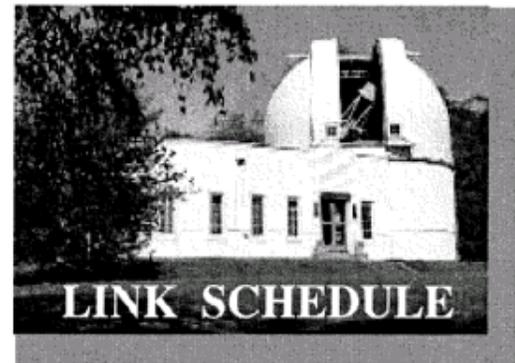
Renewals: 5

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 and Views

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

July Calendar, 2013

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

Campout at Link

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