

January, 2011
Volume 78, Issue 1
www.iasindy.org

The IAS News & Views



**The January General Meeting
January 22, 2011
7:00 PM
Holcomb Observatory
Butler University**

Star Formation in the Outer Disks of Galaxies

Teresa Wright

Indiana University

A thorough understanding of star formation in galaxies is essential for galactic evolution models and theories. The processes that drive star formation in the outer disks, where the gas density is much lower than in the central bulge, is a critical part of this understanding. Is there a star formation threshold below which star formation is unlikely or inefficient? Does that threshold apply to all galaxies of similar types?

This research was done in collaboration with Dr. Deidre Hunter at Lowell Observatory, studying star formation in two luminous spiral galaxies NGC 801 and UGC 2885. We used ultra-deep H α images taken at the KPNO 2.1 m telescope. We compared these data to stellar images at various wavelengths and to HI maps to determine the extent of star formation activity into the outer disk in these galaxies and its relationship to the gas and older stars.

Teresa spent the summer of 2010 in Flagstaff, Arizona at Lowell Observatory working with Dr. Hunter through a Research Experiences for Undergraduates (REU) internship program. This program was funded by NSF through grant AST – 1004107.

Teresa is a junior at Indiana University majoring in Astronomy/Astrophysics and Physics, with minors in Mathematics, Political Science, and French. She grew up in Mooresville, IN and

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graduated from Mooresville High School in 2008. She has been a member of the IAS since 2007. She is currently working with Dr. Caty Pilachowski at IU on spectra of star clusters.

IAS NEWS

Election Night December 18, 2010

The following people were elected as your officers and Board members for the coming year. Board members were elected for three year terms.

President -
Jeff Patterson

Vice President and Program Chairman -
Doug Brown

Treasurer:
John Shepherd

Secretary:
Betsy Brown

Board of Directors
Tom Borlik
Jeff Clemens
Phil Dimpelfeld

I personally would like to thank Ron Burgess and John Switzer for their efforts as Board members these past three years. Both have worked hard to make your Society a better organization. They have helped me on countless occasions. When you see them please take a moment to thank them for their work.

The Pres

The Christmas Party

The Christmas party was a great success. We had over 50 people in attendance. Angie Molt outdid herself again. Thanks Angie. We spent a lot of time just chatting and going over old times. We even had two members that had not seen each other since high school days. It is good for us to just get together and chat every once in a while.



IAS Calendar of Events for January

General Meeting January 22

Board Meeting January 25

Astronomical League

An Invitation to Present

The national conventions of the Astronomical League or ALCons (Astronomical League Convention) take place yearly at different locations around the country.

ALCON 2011 is unique in that it is the first time that the national gathering will focus on personal observing under very dark skies. It is also the first time that an ALCON convention will be held at a National Park, Bryce Canyon National Park in southern Utah to be exact. Bryce Canyon is known for some of the darkest skies in the lower 48 States.

We want to take advantage of amateur astronomers that have specialized knowledge and/or skills relating to personal observing that would be of interest to conference attendees. Some suggested topics are: 1) Use of filters. 2) Celestial mechanics. 3) Observing session tools and techniques. 4) CCD/Astrography. 5) Eyepiece design and uses. 6) Specific observing programs for double stars, galaxy clusters, planetary nebula, etc. 7) Maximizing GO-TO technology. 8) Observing programs outside the Messier Catalogue. 9) Planning with computer software. 9) Solar observing techniques 10) More ideas?

We invite participation from your club members to help with presentations and/or workshops at this convention as guest speakers. We have blocked out a limited number of 45-50 minute time segments during the days of the convention. We will have full access to any audio-visual equipment needed. If there is anyone interested in becoming involved, please email or write to let us know of your availability and requirements. We look forward to hearing from you!

Lowell Lyon, ALCON 2011 Co-Chair

bolide@sisna.com

www.astroleague.org

National Convention of the Astronomical League

June 29th – July 2nd, 2011

Bryce Canyon National Park, Utah

Observing Activities

None planned

Activities for January:

Link Observatory

None planned

McCloud Activities–

NAG –There is no NAG. See you next May.

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:

For those interested in going to The Link Observatories for observing call John Shepherd at 1 317-862-3442.

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 cut off the lights.

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

Other Observing Activities

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 monthly during our 2010 observing season. And if you want to follow the Sun in between our monthly Solar Telescope openings, the website www.spaceweather.com provides daily updates.

IU Kirkwood Observatory

Kirkwood Observatory on the IU campus will be open each Wednesday evening through the summer, 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.

The IU Astronomy Department has an electronic bulletin to let people know about local astronomy activities and events. If you would like to subscribe, send an email to astdept@indiana.edu and we'll put you on the distribution list. Information about

activities and events to be included in the e-bulletin should be sent to catyp@astro.indiana.edu.

NASA Space Place

Astronomers Stumble onto Huge Space Molecules

By Trudy E. Bell and Tony Phillips

Deep in interstellar space, in the swirling gaseous envelope of a planetary nebula, hosts of carbon atoms have joined together to form large three-dimensional molecules of a special type previously seen only on Earth. Astronomers discovered them almost accidentally using NASA's Spitzer Space Telescope.

“They are the largest molecules known in space,” declared Jan Cami of the University of Western Ontario, lead author of a paper with three colleagues published in *Science* online on July 22, 2010, and in print on September 3.

Not only are the molecules big: they are of a special class of carbon molecules known as “fullerenes” because their structure resembles the geodesic domes popularized by architect Buckminster Fuller. Spitzer found evidence of two types of fullerenes. The smaller type, nicknamed the “buckyball,” is chemical formula C_{60} , made of 60 carbon atoms joined in a series of hexagons and pentagons to form a spherical closed cage exactly like a black-and-white soccer ball. Spitzer also found a larger fullerene, chemical formula C_{70} , consisting of 70 carbon atoms in an elongated closed cage more resembling an oval rugby ball.

Neither type of fullerene is rigid; instead, their carbon atoms vibrate in and out, rather like the surface of a large soap bubble changes shape as it floats through the air. “Those vibrations correspond to wavelengths of infrared light emitted or absorbed—and that infrared emission is what Spitzer recorded,” Cami explained.

Although fullerenes have been sought in space for the last 25 years, ever since they were first identified in the laboratory, the astronomers practically stumbled into the discovery. Co-author Jeronimo Bernard-Salas of Cornell University, an expert in gas and dust in planetary nebulae, was doing routine research with Spitzer's infrared observations of planetary nebulae with its spectroscopy instrument. When he studied the spectrum (infrared signature) of a dim planetary nebula called Tc 1 in the southern-hemisphere constellation of Ara, he noticed several clear peaks he had not seen before in the spectra of other planetary nebulae.

“When he came to me,” recounted Cami, an astrophysicist who specializes in molecular chemistry, “I immediately and intuitively knew it I was looking at buckyballs in space. I've never been that excited!” The authors confirmed his hunch by carefully comparing the Tc 1 spectrum to laboratory experiments described in the literature.

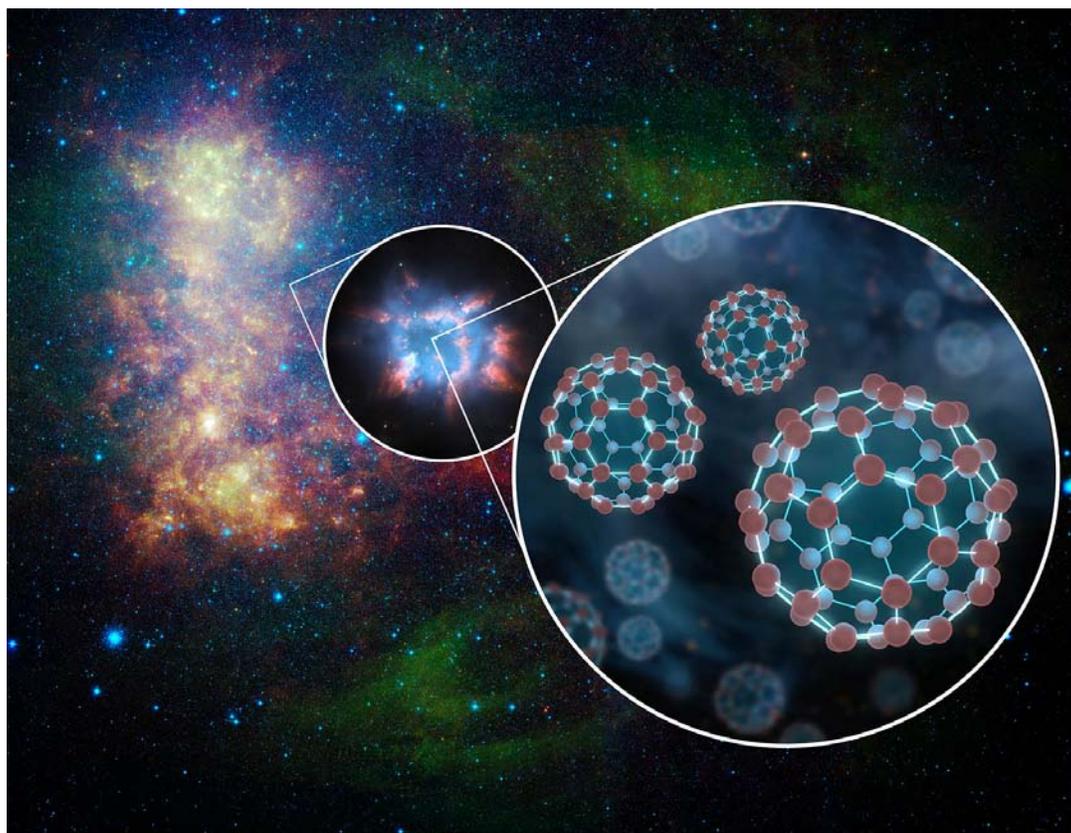
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“This discovery shows that it is possible—even easy—for complex carbonaceous molecules to form spontaneously in space,” Cami said. “Now that we know fullerenes are out there, we can figure out their roles in the physics and chemistry of deep space. Who knows what other complex chemical compounds exist—maybe even some relevant to the formation of life in the universe!”

Stay tuned!

Learn more about this discovery at <http://www.spitzer.caltech.edu>. For kids, there are lots of beautiful Spitzer images to match up in the Spitzer Concentration game at <http://spaceplace.nasa.gov/en/kids/spitzer/concentration>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Caption:

Superimposed on a Spitzer infrared photo of the Small Magellanic Cloud is an artist's illustration depicting a magnified view of a planetary nebula and an even further magnified view of buckyballs, which consist of 60 carbon atoms arranged like soccer balls.

Stargazer

STARGAZER #547 for Dec. 25, 2010

Jack Horkheimer's Christmas Gift

This year saw the death of Jack Horkheimer who for 25 years was known to PBS viewers as the "Star Gazer" (formerly the "Star Hustler"). He began each weekly 5-minute show with his exuberant trademark, "Greetings, greetings, fellow star gazers," and ended with an invitation to "Keep looking up." His enthusiasm for naked-eye astronomy was as zany as it was irresistible.

The following adaptations of two of my previous columns is a tribute the beloved Star Gazer.

In Christianity the manger symbolizes the birth of Jesus while the cross represents his death. As pointed out by Horkheimer, the Christmas season is the one time of year when the astronomical versions of these symbols are simultaneously in the night sky in the early evening.

Low in the northwest is the constellation Cygnus the Swan, the middle five stars of which form a pattern informally called the Northern Cross. At 9 p.m. the base of the cross stands near the horizon with the brightest star at the top 25 degrees above and the crossbar spanning 15 degrees. (The width of your fist held at arm's length is 10 degrees.)

Coming up in the east is the constellation Cancer the Crab, home of the lovely star cluster popularly known as the Beehive, but also named Praesepe, Latin for "manger."

Under dark, moonless skies, Praesepe appears as a soft fuzzy patch larger than a full Moon. Binoculars resolve dozens of individual stars.

While both the cross and the manger are briefly in the sky at the same time, seeing them concurrently is a challenge. As the cross begins sinking into the horizon, the manger is still too low for easy viewing.

So it's best to look for the cross around 7:30 p.m. when its top is 35 degrees and its bottom 15 degrees above the horizon. The base star, which is not very bright, is flanked by two bright stars, Altair (left) and Vega. Then by 10:30 p.m. the manger is 30 degrees above the horizon and much easier to see.

This season, being near the winter solstice, is special in many religions. So whatever yours, the Stargazer wishes you and yours peace, joy and especially love. And, deep gratitude to Star Gazer Jack Horkheimer who shared his wonderful life with millions. His self-written epitaph is priceless: "Keep Looking Up was my life's admonition, I can do little else in my present position."

Next Two Weeks. Avg. sunrise: 7:28 a.m.; avg. sunset: 5:36 p.m. (exact for Waco, TX)

- * The Moon is at 3rd quarter Mon.
- * Wed. morning Spica is above the crescent Moon with Saturn above in the southeast.
- * Fri. morning the crescent Moon is to the lower right of Venus in the southeast with Antares (right) and Mercury (left) to their lower left near the horizon.
- * The morning of Jan. 2 the crescent Moon is to the lower right of Mercury low in the southeast.
- * The evenings of Jan. 2-5, Jupiter passes within a moonwidth to left of Uranus; use binoculars.
- * Jan. 3 Earth is at perihelion, its nearest to the Sun in its elliptical orbit.
- * The night of Jan. 3/4, the Quadrantid meteor shower peaks in the north with no Moon interference with the greatest activity expected in the evening.
- * The Jan. 4 new Moon produces a partial solar eclipse but not here.

Naked-eye Planets. Evening: Jupiter, bright in the southwest, sets before midnight. Morning: Venus dominates the southeast with Saturn higher above. Mercury makes an appearance near the southeastern horizon early in January.

Membership Status

The following changes in membership took place in December:
Current Membership Total is 157

Renewals: 8

New student members:
Ao Zhou

New Members:
Steve Gardner - Shelbyville
Dennis Rader - Indianapolis
Adam Rockhill - Westfield
Bob Cherf – Carmel
Joseph Manley - Indianapolis

Inactive status:

Norm and Susie Schoppenhorst – Indianapolis
Dan Rogers – Crawfordsville

IAS LIBRARY:

There is now a link on our website page for our new Multi-Media Library. Greg has built this library of a multitude of videos that are on the web. We think it will be a great addition to our library for both novices and experienced observers. Greg has many more sources to go through so the library will continue to grow. If you have comments or questions about the library please contact Greg McCauley. (Contact Greg via the webpage iasindy.org under the contact us section)

Do you have a question or need?

We are establishing a list of members who would be willing to receive calls for help on specific objects. If you have a specific skill and would be willing to help others please contact Jeff Patterson KB9SRB@hotmail.com.

Based upon the responses we received to your intro question recently, perhaps we should add a section to the bulletin naming those members who would be willing to receive calls for help on specific subjects.

William Conner (wmtconner@att.net) - for CCD imaging and film photography.

Jeff Patterson (Contact Jeff via the webpage iasindy.org under the contact us section) –
Observatory design and construction

Eric Allen (ericandroberta@sbcglobal.net) - Telescope making and mirror grinding

Public Outreach Programs – If you want to schedule a program at the Link Observatory or at you site, please contact the following people:

Gerald Venne is our Public Events Coordinator. He will be responsible for coordinating Public Events for the IAS. To schedule a public event contact Gerald Venne (Contact Gerald via the webpage iasindy.org under the contact us section).

He needs your help. Let Gerald know if you would like to show the public our sky. We need people to help at Link and elsewhere. It is actually a lot of fun.

If you would like to schedule the Goethe Link Observatory, please contact

John Shepherd. Contact John via the webpage iasindy.org under the contact us section)

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 Bulletin for 4 months and may be renewed at the owner's request.

To place an ad, contact:

Bulletin Editor

Jeff Patterson

1780 S. Morgantown Rd.

Greenwood, IN 46143

(317) 300-0449

E-Mail: KB9SRB@Hotmail.com

For Sale

The IAS News & Views – The monthly publication of the Indiana Astronomical Society

Celestron Celestar 8" with tripod mount, Dec. motor & hand controller, & instruction manual.

Also included in the package...

Counter balance weight system, Celestron 25mm SMA 1-1/4 eyepiece, Orion Dew Zapper 20w 12v, 8" glare shroud, Full scope astrosystem's weather cover, Antares right angle finder scope, Celestron Star Diagonal 1-1/4" , Stellarvue Red-dot unity finder, Celestron (Pelican style) Hard Case for scope. \$750.

Contact Thad Hatchett at astronomynut@comcast.net or give me a call at home at 812-375-0192.

For Sale:

2 eyepieces for sale:
3mm Televue Radian
7mm Pentax SMC
Both for \$300

Jim Zdobyak
zobe1@aol.com
317-862-4715

Equipment Loan Program

The Loan Program has been helpful to those new to the hobby and others in need of observing equipment. We consider offers of equipment you may not have need for any longer.

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. Philip Dimpelfeld **Contact via the webpage iasindy.org under the contact us section**

Board Meeting –January 25, 2011

The IAS Board Meeting is being held at 430 Massachusetts Avenue in downtown Indianapolis. The building is at the point of convergence of Mass. Ave., Vermont and Alabama Streets. There is a Starbucks located in the frontage of the building. The coffee shop stays open late into the evening. Try to park as close to Starbucks as possible, preferably in a metered space. On-street parking is free after 5pm. Handicapped parking is directly in front of Starbucks entrance. The entrance to the building is to the left of Starbucks around on the side. We meet in the basement. Ride the elevator (around the corner to your left) to the basement. Turn right as you exit the elevator and go through the first door on your right. This is the conference/meeting room. If you need further assistance, please contact Jeff Patterson via the webpage iasindy.org under the contact us section

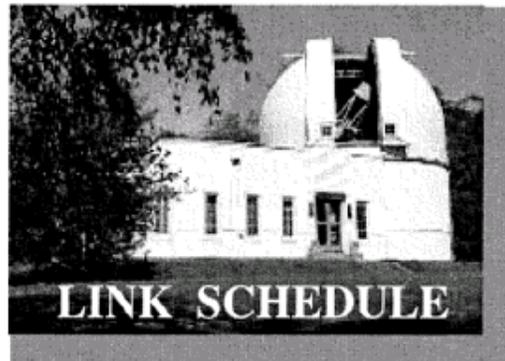
2011 Calendar of Meetings

	NAG	General	Board
January		22-Jan	25-Jan
February		19-Feb	22-Feb
March		26-Mar	29-Mar
April	9-Apr	23-Apr	26-Apr
May	7-May	21-May	24-May
June	11-Jun	25-Jun	28-Jun
July	9-Jul	23-Jul	26-Jul
August	6-Aug	20-Aug	23-Aug
September	3-Sep	17-Sep	20-Sep
October		22-Oct	25-Oct
November		19-Nov	22-Nov
December		17-Dec	

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 has to be two or more IAS members present.....*2) *contact the Observatory Manager: John Shepherd* **Contact 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 Stats

Accessing the IAS News & Views

The current bulletin can be found on the website www.iasindy.org

IAS News & Views deadline on the 20th of every month

The monthly newsletter welcomes articles of local astronomical interest information and want ads:

The IAS News & Views – The monthly publication of the Indiana Astronomical Society

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 John Shepherd or Vicki Switzer

Observatory Manager
John Shepherd **Contact via the webpage iasindy.org under the contact us section**

Public Event Coordinator
Gerald Venne **Contact via the webpage iasindy.org under the contact us section**

Equipment Loan Program Coordinator
Philip Dimpelfeld **Contact Phil via the webpage iasindy.org under the contact us section**

Membership Coordinator
Vicki Switzer **Contact Vicki via the webpage iasindy.org under the contact us section**

January Calendar, 2011

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4 New Moon ●	5	6	7	8
9	10	11	12 1 st QTR ☾	13	14	15
16	17	18	19 Full Moon ○	20	21	22 General Meeting
23	24	25 Board Meeting	26 3rd QTR ☾	27	28	29
30	31					