

GuideStar

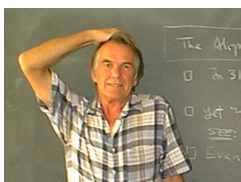


December, 2010
Volume 28, #12

At the December 3 meeting...

Pulsars

Dr. Curtis Michel



When high mass stars reach their end-of-life they go out as a supernova. What's left can be a neutron star and the neutron star, if it's rotating, can emit a beam of electromagnetic radiation.

If the beam points to us, we see it in pulses as the beam goes by us from rotation of the neutron star to another. It is similar to a rotating lighthouse. We call this a Pulsar.

One of the best known pulsars is in the middle of an object many of us have observed, the Crab Nebula. Dr. Michel has proposed that a planet is orbiting the neutron star in the Crab Nebula — this accounts for some slight variation in the pulsar's timing.

Dr. Michel joined the faculty at Rice University in 1963. In 1969 he became the department chairman of the Space Physics and Astronomy program.

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HAS Web Page:

<http://www.AstronomyHouston.org>

See the *GuideStar's* Monthly Calendar of Events to confirm dates and times of all events for the month, and check the Web Page for any last minute changes.

Schedule of meeting activities:

All meetings are at the University of Houston Science and Research building. See the inside back page for directions to the location.

Novice meeting: 7:00 p.m.

General meeting: 8:00 p.m

See last page for directions and more information.



The Houston Astronomical Society is a member of the Astronomical League.

The Houston Astronomical Society

The Houston Astronomical Society is a non-profit corporation organized under section 501 (C) 3 of the Internal Revenue Code. The Society was formed for education and scientific purposes. All contributions and gifts are deductible for federal income tax purposes. General membership meetings are open to the public and attendance is encouraged.

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 Dr. Lawrence Pinsky, U. of H.
 Dr. Lawrence Armendarez, U. of St. Thomas

Dues and Membership Information

Annual Dues:Regular\$36
 Associate\$6
 Sustaining\$50
 Student\$12
 Honorary N/C

All members have the right to participate in Society functions and to use the Observatory Site. Regular and Student Members receive a subscription to *The Reflector*. *The GuideStar*, the monthly publication of the Houston Astronomical Society is available on the web site. Associate Members, immediate family members of a Regular Member, have all membership rights, but do not receive publications. Sustaining members have the same rights as regular members with the additional dues treated as a donation to the Society. *Sky & Telescope* and *Astronomy* magazines are available to members at a discount.

Membership Application: Send funds to address shown on last page of *GuideStar*. Attention - Treasurer, along with the following information: Name, Address, Phone Number, Special Interests in Astronomy, Do you own a Telescope? (If so, what kind?), and where you first heard of H.A.S.

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Special Interest Group Listing

Any member who wants specific information on a SIG listed below may call the listed individual. Anyone who wants to offer to coach another member on his or her special interest is invited to have a listing in this section.

AdvancedBill Leach281-893-4057

2010 Star Party Dates

- 12/4 HAS members only

Other Meetings...

Johnson Space Center Astronomical Society meets in the the Lunar and Planetary Institute on the 2nd Friday of each month. Web site: www.jscas.net

Fort Bend Astronomy Club meets the third Friday of the month at 8:00 p.m. at the First Colony conference Center. Novice meeting begins at 7:00, regular meeting begins at 8:00. Web site: <http://www.fbac.org>

North Houston Astronomy Club meets at 7:30 p.m. on the 4th Friday of each month in the Teaching Theatre of the Student Center at Kingwood College. Call 281-312-1650 or E-mail bill.leach@nhmccd.edu. Web site: www.astronomyclub.org

Observations... of the editor

by Bill Pellerin, GuideStar Editor

All I Want for the Holidays...

2010 has been a pretty good year, astronomically speaking. There have been plenty of clear nights this year and lots of opportunities to observe the sky. I want more!! Ok, greed isn't good (despite what you may have heard), but more opportunities to observe to get good variable star data and to share the sky with the public, with family, and with friends is what I'd like to have in 2011.

Cold Weather Observing

I have to admit to being a cold weather wimp. As we look forward to some cold, clear nights for observing it's important to be prepared. Many times I've underestimated how uncomfortable I'd get during an observing session and I've under dressed for the occasion. Here's what I have for a cold night:

- Ski suit — heavy jacket with an inner and an outer shell which can be separated if needed. Includes ski pants that I can put on over my jeans. This is about as good as it gets.
- Hand warmers — many times I've been made more comfortable by chemical hand warmers. These are generally available at a camping supply store. They contain chemicals that react with the air when they're opened and stay warm for several hours. I keep a hand warmer in my coat pocket and when my hands aren't doing something I grab the hand warmer. There are some of these made for shoes as well.
- Ear muffs — I have a pair of ear muffs that I received as a holiday gift one year. These are great. They have a spring steel band in the back and fit tightly over my ears. The ones I have are 180 brand, but I'm sure that there are other similar ones on the market. The only problem I have with ear muffs is that it's difficult to take off my glasses and put them back on while wearing them.
- Finger gloves — These gloves cover the palm and the back of the hand, but only to the first knuckle of the fingers. The ends of the fingers are exposed so you can fiddle with knobs, keyboards, or whatever you need to do. There's a flap that covers the fingers when needed.
- Moon boots — hardly stylish, but comfortably warm. I found several to choose from on the zappos.com web site. I have a cheap pair, but since they don't get a lot of use (or abuse) they're fine for me.

- Layers — You hear this all the time.. Dress in layers. Doing so allows you to add and remove layers to get the warmth you want.

Thanks...

Thanks to our officers, board members, chairmen/chairwomen, and volunteers. These are the men and women who deal with all the organizational issues for the rest of us — so we don't have to. They have particularly difficult issue of putting together a budget for the HAS at their next meeting.

It isn't easy to balance all the needs and desires of the membership, but we, as members, are entrusting them with this responsibility.

Until next time...

clear skies and new moons!

..Bill

Just Looking

A GuideStar Interview by Clayton L. Jeter

Richard Nugent



I've known Richard Nugent for years as a club member here in our society. He's one of those people that always make a point to speak first. He's very cordial. Every time I see or think of Richard, I can't help but think how he helps promote science with young folks thru the annual *Science and Engineering Fair of Houston*. This guy is busy to say the least...just read his bio below.

Its always fun to learn about our HAS members. Meet Richard...

The Richard Nugent bio



Richard had an interest in astronomy at a very young age but couldn't do anything about it until he was 8 years old, since he had poor vision. Then he got a haircut. Richard graduated from the Department of Astronomy at the University of South Florida in 1979 with a B.S. and M.S. in Astronomy, specializing in positional astronomy. His graduate work was with the world renowned astronomer and astrometrist Heinrich K. Eichhorn. Professor Eichhorn is known for numerous original contributions to astronomy including his superior work in the early 1970's (along with astronomer George Gatewood) disproving Peter van de Kamp's theory claiming the existence of a planetary companion orbiting Barnard's Star, the 2nd nearest star to our solar system. Professor Eichhorn's philosophy has made a lasting impression on Richard.

Positional astronomy deals with the precise determination of stellar positions and motions of stars, star clusters and other objects in the Universe. Since the motions of stars are so small, it takes years to accurately measure them using highly sophisticated techniques and equipment. Richard worked at NASA's Lyndon B. Johnson Space Center in Houston, Texas specializing in image processing and analysis of images from the LANDSAT satellites to determine world crop inventories from space. He then moved to the Space Shuttle Program's GNC division (Guidance, Navigation and Control) performing critical real time calculations of Space Shuttle orbits and rendezvous maneuvers including instrument pointing to celestial objects. Richard has over 60 publications in both professional journals and astronomy newsletters and is a contributing author to Guy Ottewell's yearly *Astronomical Calendar*. He is the author and Editor in Chief of the International Occultation Timing Association's (IOTA) new comprehensive book on lunar and asteroid occultations, "*Chasing the Shadow: The IOTA Occultation Observer's Manual*". Richard is the head Judge for Astronomy Projects at the Science and Engineering Fair of Houston, one of the largest Science Fairs in the Country and has judged projects since 1993.

Richard left the space program to start his own real estate investment business and has successfully bought and sold over 250 single family homes and apartments. He has traveled worldwide on over 120 scientific expeditions collecting scientific data on solar eclipses plus stellar eclipses by asteroids. He

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has been involved in occultations for 20+ years and is IOTA's Executive Secretary. Richard is also an devoted athlete, competing in adventure races and other endurance events, some 25-30 miles and longer, and is a Senior member of Instructor Jack Walston's Navy SEAL Physical Training Alpha Team.

The Richard Nugent interview...

Clayton: Great to have you here Richard for this HAS interview.

Ready to start?

OK... you got your hair cut. Which did you see first, the sky or the telescope?

Richard: After that haircut I went on a school field trip to the Hayden Planetarium in New York City (I lived on Long Island). What I saw there triggered the astro genes in me that I'll never forget - a huge motorized scale model of the solar system hanging from the ceiling. The planets were rotating, the larger moons were orbiting them, and the planetary systems were revolving around the Sun. And the rotation of the Earth model was accurate - it spun around 365 times for each orbit around the Sun. The lighting was done in such a way so you only saw the planets/moons, and very little of the axles and wires that held the system together. When I say a "huge motorized scale model" it must have been 30-35 feet in diameter which was out to Pluto. That's what hooked me on astronomy - the 3-dimensional solar system aspect.

Clayton: Do you think that by becoming involved in astronomy, it has somehow changed a direction in your life?

Richard: Certainly. With my first telescope (a 60mm Tasco refractor at age 13) I was well on my way to becoming an astronomer. I did my first occultation in 1970 with that telescope. This occultation was the result of an article about these events from *Popular Science* magazine, "How to Watch the Moon Hide a Star". And this led to my first solar eclipse on March 7, 1970 from eastern Long Island. My astronomy interest (concurrently with my photography interest) led to my developing and printing my own black and white films with a home made darkroom in my closet. As most of us 1960's kids knew, photo labs wouldn't print negatives that looked as if they were not exposed, when in fact they had lots of "dots" on them - STARS !! And this led to trying astrophotography with a 35mm camera and telescope. One of my first photos was with the camera (with 50mm lens) on a tripod pointed through the Tasco's eyepiece looking at the Sun (with filter). It took some tedious manipulation of the camera/tripod and the telescope/tripod to take a photo. The Sun photo came out OK for the setup - and so did a patch of grass in the upper left corner of the photo from pointing the camera down at the eyepiece.



Clayton: What different telescopes do you own? I think you told me that you're really into small aperture.

Richard: One thing about smaller telescope - they get used more than the larger ones. I have an older Meade 2045D, a 10 cm (4-inch) SCT with screw on tripod legs. This scope has traveled the world doing videos of asteroid occultations and the Baily's beads effect for IOTA's solar eclipse research. Also have a Meade ETX-90, a NexStar 5 and a 3.5 inch Questar. Doing occultations and the solar eclipses requires being at the right place at the right time hence the need for portability. My largest scope is a Meade LX-200 14-inch located in Ft. Davis permanently mounted in a domed observatory.

Clayton: I forgot about your observatory out in West Texas.... Tell us about it.

Richard: I built a 10-foot domed observatory in Ft. Davis in 2004. With the distance from Houston, I had help from a neighbor across the street. Jimmy Rose of Ft. Davis (he passed away in 2005) had built nearly every observatory in the Ft. Davis area where he lived - at least 12 of them. We designed the dome and building together, I dug the holes for pouring the concrete pier, Jimmy assembled the dome/building (all metal) and I finished the dome rotation/shutter mechanism and the interior work and electrical hookup. The dome is 10-foot in diameter made by a now extinct company out of El Paso and houses the Meade LX-200 14-inch. As anyone knows that's been to the Texas Star Party, the location is ideal: 5,200 ft. altitude,

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some of the darkest skies in North America, dry climate, an abundance of clear nights throughout the year, plus the benefits of a small town atmosphere.

Clayton: Where is most of your observing performed while in the Houston area and how often do you observe out at your observatory?

Richard: In the Houston area I observe from my house (2 miles from downtown), sometimes drive to a local parking garage top level to see the sky or any place necessary for an occultation observation. For the asteroid occultation events that pass near Houston, I'll go to some County Rd mainly to get away from the lights and traffic. I have had successful asteroid events from my backyard which has a limiting visual magnitude of $m = 3.5$. I can reach $m = 10.5$ stars on video with my image intensifier and the 4-inch Meade. I go out to the Observatory in Ft. Davis 6-8 times/year and this depends on my schedule.

Clayton: Are any of your family or neighbors interested in your astronomy pursuits? Do they observe too?

Richard: My two next door neighbors Marg Nunez and Larry Patchell are very much into astronomy also. Many of our members recall Marg was the HAS President in 1995. Larry attends nearly all the meetings. Marg is very busy with her Nursing career and unfortunately only attends one or two meetings per year. My cousin's husband in California has an 8-inch Meade and a CCD camera but I'm not sure how often he uses it. My mother was very interested in visual astronomy and she made an astronomy webpage for novices that was once featured on the Mauna Kea's Hawaii Observatory website. Family members are usually amazed at views of the Moon, Jupiter and Saturn through the telescope, but that's where their interest ends.

When my daughter was about 12 years old, I showed her Venus during the daytime on a very clear day here in Houston. I first found it in the telescope and we used that as a directional sight to find it visually with just our eyes. She was amazed about that – seeing Venus naked eye in the daytime. Later that night I showed her Saturn through the telescope and she was saying “Oh Cool Dad !!!” The we looked at Jupiter and its Galilean Moons to which she replied, “OH THAT IS SOOOO COOL DAD !!!” . At this point I asked her what her favorite planet was. She said “Earth”.

Clayton: *Sky and Telescope* or *Astronomy*? And why?

Richard: I would favor *Sky and Telescope*. I began subscribing to it in 1969 before *Astronomy* magazine started. *Sky and Telescope* is more technical and we scientific folks appreciate it. *S & T* reports about occultation events through the years and work done by IOTA (*Astronomy* magazine rarely reports about occultations) .

Clayton: Do you have an amateur observing mentor? Who inspired you? Was it Professor Eichhorn or were there others?

Richard: Paul Maley here in Houston has been a major source of influence and motivation. I've known Paul for 20+ years and we have traveled around the world together chasing the solar eclipses and asteroid events for IOTA's continued research in these areas. From my college days Professor Eichhorn in addition to being one the most respected astronomers in his field, he also was a real character. One of his many pet peeves was the importance of knowing the rotation matrices for transforming the various coordinate systems (Alt/Az, Ecliptic, Right Ascension, Galactic, Equator, etc.). He told us we had to know and understand these rotation matrices so well that if we were to be awoken out of the *deepest sleep*, we should be able to recite them.

One time I was in his office going over my master's thesis and he was pointing out one mistake after another. Eichhorn told me, “Richard, it's perfectly OK to make mistakes – BUT NOT TO PUBLISH THEM”. It's these memories that one doesn't forget. And the Houston Astronomical Society has its share of giants in the field that influence me, Barbara Wilson, Larry Mitchell and others that have made huge contributions to astronomy. You can't help but to be motivated when you're around these folks. And of course the Goldberg's have an asteroid named after them. Our club has a wide variety of talent.

Clayton: Have you a favorite star party that you attend regularly? Are there others?

Richard: My favorite is the Texas Star Party (obviously). I try to make it every year. And I do many local star parties for schools and set up tables for school science nights which are starting up this time of year now that classes are back in session. I have been invited to speak at a few out of state star parties.

Clayton: How do you envision amateur astronomy in the next 25 years?

Richard: What I see is the technological innovations continuing to revolutionize amateur astronomy as they have done so for the past several decades. We amateur (unpaid) astronomers are continuing to do work that the professional can't or cannot do. Occulta-

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tions for example, you have to be at the right place at the right time which means extreme portability and specialized equipment to record the events. The emergence of the internet/email in the past 15 years has made the task of notification for occultations much easier than making phone calls. More sensitive CCD cameras and video chips allow us to probe to fainter magnitudes and produce images/videos that rival those of professional observatories. Variable star observing which was a visual field is now going high tech – amateurs with CCD cameras turn in magnitude estimates accurate to 0.01 mag. Amateurs are even recording light curves of extra-solar planets transiting their parent stars– that were unheard of just 10 years ago ! Professional-amateur collaboration wasn't widespread in the 1950'-1980's but it's routine these days. This trend will continue. It's even possible that a major observatory will shut down due to government funding issues. And then the amateurs will pool their resources together to get it started again for their own programs. I believe one of the telescopes on Mt. Wilson in California has already had this occur. There are online Journals put out entirely by the amateur community that publish more than just pretty pictures – they put out high quality scientific research. One such example is the Journal for Double Star Observations.

Clayton: Do you have any helpful advice to pass on to young people just starting out in astronomy?

Richard: Yes, it's the same old phrase. Stay in school, take as many math and science classes as you can. Excellent computer efficiency is a must. This provides the foundation to go into just about any area of astronomy.

And don't worry about using or acquiring a GOTO telescope. You see more objects faster and get more work done. But of course you should also have a fair idea of your way around the sky.

Clayton: Is there an email address that you have that a Houston Astronomical Society member could contact you for an additional question or two?

Richard: RNugent@wt.net , its also on the HAS webpage under "Members Email". I welcome any contact from HAS members or anyone else.

Clayton: Thanks Richard for taking the time to share your interest and thoughts within our HAS newsletter, *The GuideStar*. We wish you luck with all of your astronomy interests. Keep up the great work at keeping young people involved in astronomy.

Clear skies always!

Richard: Thanks Clayton. And once again, I love that NexStar 5!!

Clayton L. Jeter is an avid SCT visual observer and a long time member of the Houston Astronomical Society. Contact him at: stonebloke@gmail.com

Society Update

Minutes of the Houston Astronomical Society

By Rene Gedaly, HAS Secretary



Call to order. Welcome visitors

Ken Miller opened the general membership meeting at 8:00 pm November 12, 2010 and welcomed visitors.

2011 slate approved unanimously

Ken Miller presented the slate of members running for club positions. Gordon Houston verified that a quorum of the membership was present for the vote. Mike Edstrom moved that the slate be approved by acclamation; Jane Lambert seconded. The slate was approved unanimously.

Officers

President – Ken Miller
Vice President – Gordon Houston
Secretary – Rene Gedaly
Treasurer – Warren Murdoch

Directors-at-Large

Greg Barolak
Bill Flanagan
Chris Mendell
John Missavage
Bram Weisman

Standing Committee Chairpersons

Telescope – John Haynes
Field Trip and Observing – Siobhan Saragusa
Program – Brian Cudnik
Publicity – John Missavage
Novice – Justin McCollum
Audit – Scott Mitchell
Observatory – Bob Rogers
Education – Richard Nugent
Welcoming – Kate Keene

2011 budget meeting December 14, 2010

Ken Miller invited all members to attend the annual budget meeting held during the December board meeting held at the Houston Chronicle. Contact Ken Miller for info about where to park and how to get into the building.

HAS-only star party December 4th

Mike Edstrom thanked the membership for supporting the star parties; there were 45 – 50 attending in November. The December star party is

open to HAS members only and the gates open at 3 pm. There will be no food provided at this event.

AL observing club awards

Steve Goldberg presented Ed Fraini the Astronomical League honorary Messier Club certificate. There are 110 Messier objects. Steve also presented Clayton Jeter the Astronomical League Binocular Messier Club pin and certificate for identifying 50 or more Messier objects with binoculars. Congrats, Ed! Congrats, Clayton!

GuideStar provided free to membership

The *GuideStar* has no budget and is provided free to the membership by Bill Pellerin. Ken Miller thanked Bill for the great work he provides in getting us the *GuideStar* each month. Bill Pellerin walked through the November issue and invited members to submit articles. Deadlines are the 15th of the month for the following month's issue. Send to editor Bill Pellerin at billpellerin@sbcglobal.net.

Night Sky Network outreach kits

Bram Weisman showed the items available in the outreach kits provided by Night Sky Network. Clubs earn kits by volunteering at outreach events and logging their hours in the NSN website. HAS has several kits available for members to use during outreach events.

Texas Star Party 2011

Steve Goldberg announced that the Texas

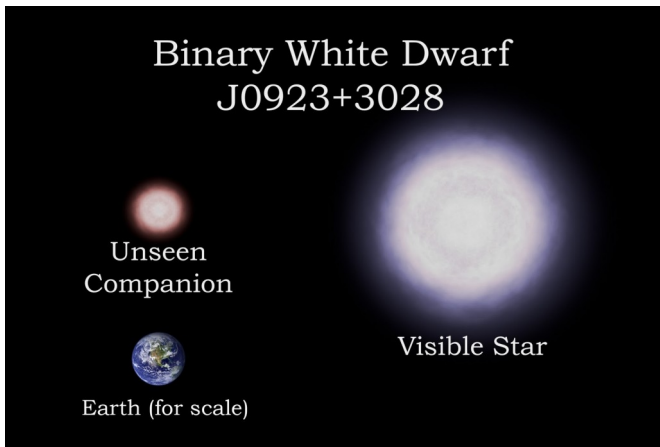
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Do Puny White Dwarfs Make Wimpy Supernovae?

By Mike Simonsen, *Simostronomy*

Based on results from a radial velocity survey, Warren Brown, (Smithsonian Astrophysical Observatory) and his team have placed a few more pieces into the supernova puzzle.

Supernovae come in many flavors. There are Type Ia, the “standard candles” everyone has heard of; and there are Type Ib and Ic, which also involve binary systems. We also have Type II supernovae that are



The binary star system J0923+3028 consists of two white dwarfs: a visible star 23 percent as massive as our Sun and about four times the diameter of Earth, and an unseen companion 44 percent of the Sun's mass and about one Earth-diameter in size. The stars will spiral in toward each other and merge in about 100 million years. (Credit: Clayton Ellis (CfA))

finally the weak-kneed cousins of the bunch, the under-performing underluminous supernovae.

Underluminous supernovae are a rare type of supernova explosion 10–100 times less luminous than a normal SN Type Ia and eject only 20% as much matter. Brown and his team have been investigating the connection between underluminous supernovae and merging pairs of white dwarfs.

In the 1980s, on the basis of our theoretical understanding of stellar and binary evolution it was predicted that many close double white dwarfs would exist. However, it was not until 1988 that the first one was actually discovered.

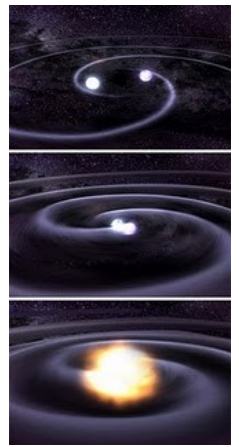
The way to find close double white dwarfs is to take high resolution spectra of the H-alpha absorption line of a white dwarf at several dif-

ferent times and look for variation that is caused by the orbital motion of the white dwarf around an unseen (dimmer) companion. The first systematic searches were not very unsuccessful. Only one system was found. Then, during the 1990s, Tom Marsh and collaborators concentrated their search on low-mass white dwarfs, which, based on current theories, could only be formed in a binary system. In this way a dozen more systems were found.

Extremely low mass (ELM) white dwarfs (WDs) with less than 0.3 solar masses are the remnants of stars that never ignited helium in their cores. The Universe is not old enough to have produce ELM WDs by single star evolution. Therefore, ELM WDs must undergo significant mass loss sometime in their evolution. Producing WDs with 0.2 solar masses most likely requires compact binary systems.

"These white dwarfs have gone through a dramatic weight loss program," said Carlos Allende Prieto, an astronomer at the Instituto de Astrofísica de Canarias in Spain and a co-author of the study. "These stars are in such close orbits that tidal forces, like those swaying the oceans on Earth, led to huge mass losses."

Observational data for ELM WDs is pretty hard to come by because of their rarity. For example, of the 9316 WDs identified in the Sloan Digital Sky Survey, less than 0.2% have masses below 0.3 solar.



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Half of the pairs discovered by Brown and collaborators are merging and might explode as supernovae in 100 million years or more.

"We have tripled the number of known, merging white-dwarf systems," said Smithsonian astronomer and co-author Mukremin Kilic. "Now, we can begin to understand how these systems form and what they may become in the near future." Unlike normal white dwarfs made of carbon and oxygen, these are made almost entirely of helium.

"The rate at which our white dwarfs are merging is the same as the rate of under-luminous supernovae - about one every 2,000 years," explained Brown. "While we can't know for sure whether our merging white dwarfs will explode as under-luminous supernovae, the fact that the rates are the same is highly suggestive."

At least 25% of these ELM WDs belong to the old thick disk and halo components of the Milky Way. This helps astronomers know where to look for underluminous SNe and where they are unlikely to find them, if the models are correct. If merging ELM WD systems are the progenitors of underluminous SNe, the next generation of surveys such as the

Palomar Transient Factory, Pan-STARRS, Skymapper, and the Large Synoptic Survey Telescope should find them amongst the older populations of stars in both elliptical and spiral galaxies.

The papers announcing their find are available online at: <http://arxiv.org/abs/1011.3047> and <http://arxiv.org/abs/1011.3050>.

For other articles by Mike Simonsen go to this address:

<http://simostronomy.blogspot.com/>

***This content distributed by the AAVSO
Writer's Bureau.***

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Star Party would be held in June and that the reservation form would be available in the next few days on the TSP website.

Observatory report

Bob Rogers, observatory committee chair, announced that he had received another \$100 donation to the observatory fundraising campaign.

Comet report

Justin McCollum, Professor Comet and novice chair, gave his comet report and referred members to the Comet Corner on the HAS website at <http://www.astronomyhouston.org/>.

November speaker

Larry Mitchell spoke on Super-thin Galaxies.

Meeting adjourned

Ken Miller adjourned the meeting at 9:52 pm and announced that the next meeting was December 3rd.

Observatory Corner

By Bob Rogers, Observatory Chairman

Hello everyone.

First, I would like to say congratulations to all the newly elected Officers and Committee chairpersons to the Houston Astronomical Society. I'm looking forward to 2011.

The weekend of October 22nd – 24th was a very busy time at the site. Upon arriving at the site Friday afternoon, Mike Edstrom had already pulled up the linoleum floor from the Telescope room in the Observa-



Amelia and Steve Goldberg work on the observatory floor.

back in the telescope room.

Meanwhile, Boy Scout troop 404 from Pearland also came out for the weekend to camp and do some work for HAS. The boys helped sack up all the old linoleum floor into garbage bags, pick up some dead branches that had fallen from a dead tree in the picnic area and trim shrubs from the bottom of the other trees in the picnic area and helped me pull up the old red lights along the sidewalk by the bathroom and install new ones. All in all, it was a very busy and productive weekend. I would like to thank Mike Edstrom, Don Selle, Amelia and Steve Goldberg and Boy Scout Troop 404 for all their help at the site.

For those of you that weren't at the August HAS membership meeting, I presented a short PowerPoint Presentation to the membership about the need for donations. Since taking over the Observatory Committee in 2007, I have not asked for donations but have received donations from some members every year.



Lately though, I have had site expenses that have somewhat depleted the observatory bank account below the minimum amount of dollars that I need to maintain for emergencies such as well repair or septic system repair. Some of



the expenses have been on the riding mower used to mow the grass, the Corby system that is used in the observatory, the completion of the tractor shed and the removal of the 5 dead trees in critical areas at the site. Still needed

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are donations to replace the north fence and to buy a new zero turn riding mower that can handle the terrain. We have started charging \$5.00 a plate for food at the All-Clubs events (includes a hamburger, hot dog, chips, ice tea and a dessert). We will NOT be charging for the annual HAS Picnic food.

If you can donate, it would be appreciated and all donations are Tax deductible.

Donations can be made to:

HAS
PO Box 20332
Houston, TX 77225-0332

In the note section, please put – “Observatory donation”

Remember that we are the only club that has an observing site that everyone can go to observe away from city lights. It costs money every year to keep the site maintained for your use and pleasure.

I do need to remind everyone that we need to start filling out log reports at the site so I can give this information to the Fondren Foundation. The property is on a 99 year lease and part of the lease agreement is that HAS needs to report every year to the Fondren Foundation that the property is being used. The log reports are located in the box in the middle of the field. Just open the cover, fill out the report and then slide it into the slot that is in the inside of the cover and then close the box. It is very important that everyone fill out a log report so that we are showing that the observing site is being used. Your help on this is very much appreciated.

If you have a Randalls card, and have not done so, please have it coded for the Houston Astronomical Society. Our number is #6618. The Society gets 1% of the gross sales that members spend at Randalls. Randalls totals up the amount spent each quarter and will send us a check if the amount goes over \$2,500.00, otherwise the total rolls over to the next quarter or zeros out at the end of the calendar year. So please link your Randalls card to the Houston Astronomical Society so that the society can benefit from this Randalls program. Our number is #6618. This is very easy to do, just go to the Courtesy Booth and tell the person there what you want to do.

If you have any suggestions or thoughts for the site, let me know.

Bob Rogers

Observatory Chairman
281-460-1573
siteworkerbob@hotmail.com

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The press release is available at <http://www.galex.caltech.edu/newsroom/glx2010-03f.html>. The full published article is “Star Formation Signatures in Optically Quiescent Early-Type Galaxies” by Samir Salim and R. Michael Rich, *The Astrophysical Journal Letters* 714: L290–L294, 2010 May 10.

Point the kids to the Photon Pile-up Game at <http://spaceplace.nasa.gov/en/kids/galex/phototon>, where they can have fun learning about the particle nature of light.

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

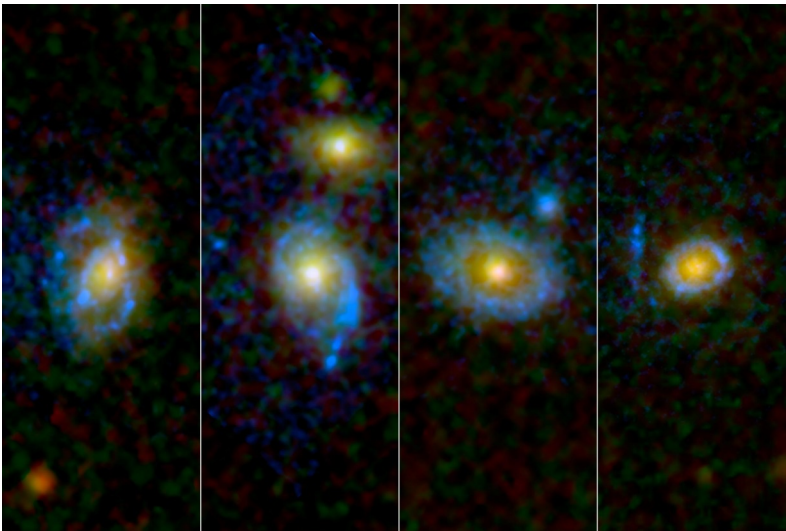
Blue Rings around Red Galaxies

by Trudy E. Bell and Dr. Tony Phillips

NASA Space Place

Beautiful flat rings around the planet Saturn are one thing—but flat rings around entire galaxies?

That is the astonishing discovery that two astronomers, Samir Salim of Indiana University at Bloomington and R. Michael Rich of UCLA



The Galaxy Evolution Explorer UV space telescope helped to identify red elliptical galaxies that also emitted the strongest UV. These are detailed, long-exposure Hubble Space Telescope images of four of these galaxies that capture the UV-emitting rings and arcs indicative of new star formation.

described in the May 10, 2010, issue of *The Astrophysical Journal Letters*.

“For most of the twentieth century, astronomers observing at visible wavelengths saw that galaxies looked either ‘red and dead’ or ‘blue and new,’” explained Salim. Reddish galaxies were featureless, shaped mostly like balls or lentils; bluish ones were magnificent spirals or irregular galaxies.

Elliptical galaxies looked red, astronomers reasoned, because they had mostly old red giant stars near the end of their life cycles, and little gas from which new stars could form. Spiral and irregular galaxies looked blue, however, because they were rich in gas and dust that were active nurseries birthing hot, massive, bluish stars.

At least, that's how galaxies appear in visible light.

As early as the 1970s, though, the first space-borne telescopes sensitive to ultraviolet radiation (UV) revealed something mysterious: a few red elliptical galaxies emitted “a surprising ultraviolet excess,”

said Rich. The observations suggested that some old red galaxies might not be as “dead” as previously supposed.

To investigate, Salim and Rich used NASA’s Galaxy Evolution Explorer satellite to identify 30 red elliptical galaxies that also emitted the strongest UV. Then they captured a long, detailed picture of each galaxy using the Hubble Space Telescope.

“Hubble revealed the answer,” says Salim. The UV radiation was emitted by enormous, flat bluish rings that completely surrounded each reddish galaxy, reminiscent of the rings of Saturn. In some cases, the bluish rings even showed a faint spiral structure!

Because the bluish UV rings looked like star-forming spiral arms and lay mostly beyond the red stars at the centers of the elliptical galaxies “we concluded that the bluish rings must be made of hot young stars,” Salim continued. “But if new stars are still being formed, that means the red-and-dead galaxies must have acquired some new gas to make them.”

How does a galaxy “acquire some gas?” Salim speculates that it was an act of theft. Sometimes galaxies have close encounters. If a gas-rich irregular galaxy passed close to a gas-poor elliptical galaxy, the gravity of the elliptical galaxy could steal some gas.

Further studies by Galaxy Evolution Explorer, Hubble and other telescopes are expected to reveal more about the process. One thing is certain, says Rich: “The evolution of galaxies is even more surprising and beautiful than we imagined.”

(Continued on page 13)

Shallow Sky Object of the Month

Gliese 229—a M Dwarf Star

By Bill Pellerin, GuideStar Editor

Object: Gliese 229, SAO 171334, HIP 29295

Class: Star

Magnitude: 8.15

R.A.: 06 h 10 m 35 s

Dec: 21 degrees 52 m 01s

Constellation: Lep

Size/Spectral: M

Distance: 18.8 ly

Optics needed: 3" telescope or larger

Why this object is interesting

We end our journey of the various colors and temperatures of stars by looking at a M star. The star we're seeing this month is a red dwarf star, so it's on the main sequence. Many of the red stars you see in the sky are late life stars (red giants or carbon stars). Some of the late life red stars are redder than M stars and are given color designations beyond M such as C for carbon stars.

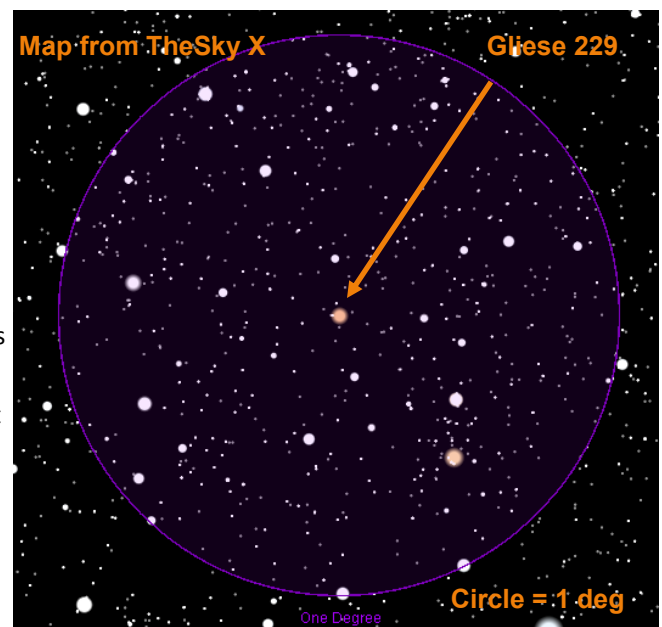
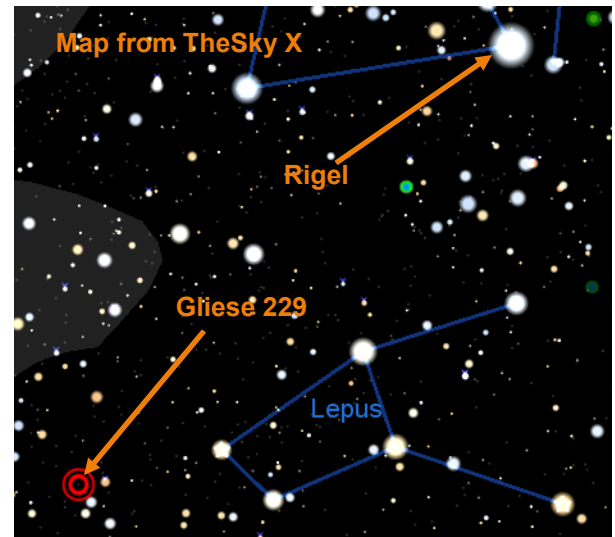
Gliese 229 is a low mass dwarf star; one with not enough mass to glow brightly in the sky even though it is a close-by star at 18.8 light years away. It is only about 60% of the mass of our Sun.

On December 18, 2010, Gliese 229 transits at 00:50 and so it is well placed for observing.

The Gliese star catalog is a relatively new one, created by German astronomer Wilhelm Gleise in 1957 and updated by other astronomers.

For the last few months this article has directed you to observe stars of various colors along the spectrum OBAFGKM. If you missed any of the stars, back issues of the GuideStar are on the Houston Astronomical Society web site:

www.astronomyhouston.org



Houston Astronomical Society

P.O. Box 20332

Houston, TX 77225-0332

General Membership Meeting

The Houston Astronomical Society holds its regular monthly General Membership Meeting on the first Friday of each month, unless rescheduled due to a holiday. Meetings are in Room 117 of the Science and Research Building at the University of Houston. A Novice Presentation begins at 7:00 p.m.. The short business meeting and featured speaker are scheduled at 8:00 p.m.

Parking is NOW across from Entrance 14, by the stadium.

Board of Directors Meeting

The Board of Directors Meeting is held on dates scheduled by the board at 7:00 p.m. at the Houston Chronicle office, downtown. Information provided to *GuideStar* will be published. The meetings are open to all members of the Society in good standing. Attendance is encouraged.

GuideStar Information

The H.A.S. *GuideStar* is published monthly by the Houston Astronomical Society. All opinions expressed herein are those of the contributor and not necessarily of Houston Astronomical Society. The monthly Meeting Notice is included herein. *GuideStar* is available on the HAS web site to all members of H.A.S., and to persons interested in the organization's activities. Contributions to *GuideStar* by members are encouraged. Electronic submission is helpful. Submit the article in text, MS-Word format via email BillPellerin@sbcglobal.net. Copy must be received by the 15th of the month for inclusion in the issue to be available near the end of the same month. Or, bring copy to the General Membership Meeting and give it to the Editor, or phone to make special arrangements.

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Advertising: Advertisers may inquire concerning ad rates and availability of space.

The Houston Astronomical Society welcomes you to our organization. The HAS is a group of dedicated amateur astronomers, most of whom are observers, but some are armchair astronomers.

The benefits of membership are:

- Access to our 18 acre observing site west of Houston -- a great place to observe the universe!
- A telescope loaner program -- borrow a HAS telescope and try observing for yourself!
- A monthly novice meeting, site orientation meeting, and general meeting with speakers of interest.
- Opportunities to participate in programs that promote astronomy to the general public (such as Star Parties at schools)
- A yearly all-clubs meeting for Houston area organizations
- Meet other amateurs and share experiences, learn techniques, and swap stories

You're invited to attend our next meeting.

You'll have a great time.

Houston Astronomical Society

Meeting on Friday, December 3

7:00 Novice Meeting

8:00 General Meeting

University of Houston

Directions to meeting:

From I-45 going south (from downtown)

- exit at Cullen Boulevard
- turn right on Cullen
- turn right into the parking lot (by the stadium)
- Science and Research is across the street (2nd building back)

From I-45 going north (from NASA/Galveston)

- exit at Cullen Boulevard
- turn left on Cullen
- turn right into the parking lot (by the stadium)
- Science and Research is across the street (2nd building back)

Parking:

There is Free Parking, **BUT DO NOT PARK IN ANY RESERVED PARKING SPACES AT ANY TIME.**
U of H parking enforcement will ticket your vehicle.