

The Focal Point

The Atlanta Astronomy Club
Established 1947
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Editor: Tom Faber

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September General Meeting

Join us for the September meeting of the Atlanta Astronomy Club on Friday September 9th at 8PM. Refreshments will be provided starting around 7:30PM. The location of the meeting is at the Atlanta Freethought Society (AFS) building in Smyrna. Directions to the meeting at The Atlanta Freethought Building: Take I-285 to exit # 16. Go south (in towards Atlanta) about half a mile. Turn right on to North Church Lane. The first Building you see on the left is it (Looks like a small brick church). The street address is 4775 North Church Lane S.E. , Smyrna 30080.. There will be a talk by a guest speaker, and announcements of upcoming club events. The meeting will run for about 2 hours. If you have any announcements you want to make during the meeting, please contact our President Mark Banks, so that he can schedule the time for you during the meeting. His contact information is on page 7.

The Program:

On September 9th, club member Dan Llewellyn will be presenting a unique and controversial presentation on "The Holographic Universe". Parallel universes, nexus points, multiverses, alternate realities, Dan will get into weird theoretical science and astronomy.

Upcoming AAC Meetings:

Future meetings are scheduled for October 14, November 11, and December 10 (Christmas potluck dinner). Meeting speakers, and talk topics will be announced at a later date. The October and November meetings will be at the AFS building.



Photo by Dan Llewellyn

The Peach State Star Gaze!

The next Peach State Star Gaze is coming soon! The AAC's annual star party will again be held at the Deerlick Astronomy Village near Sharon, GA, and run from Sunday, September 25 to Sunday, October 2 (new moon is September 27). DAV has an 11-acre field that has room for RVs, campers, and tents. Limited power is available on the field. Full rest rooms with showers are available along with a 40' x 40' pavilion and gas BBQ grill. This year Micki's Kitchen returns to provide us with coffee, refreshments and meals (and brownies!). The Atlanta Astronomy Club's 24" telescope will be set up on the field and AAC's clubhouse will be open. Registration is now open. Please visit us at AtlantaAstronomy.org/

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The Deerlick Astronomy Village, located about 100 miles east of Atlanta and 50 miles west of Augusta, has some of the darkest skies in the state.



The AAC field at the DAV during the 2010 PSSG - Photo by Tom Faber.

August General Meeting Minutes

by Pixie Bruner, AAC Recording Secretary

Meeting Photos by Daniel Herron

The August meeting was held on Friday August 19 in the Planetarium of the Emory University Math and Sciences Building. August's speaker was Richard Jakiel, the AAC Speaker Chair holder, on "DSLR Imaging or Imaging on a Shoestring". 43 members were in attendance at Emory University. On September 9th, 2011, Dan Llewellyn will be presenting a unique and controversial presentation on "The Holographic Universe". Parallel universes, nexus points, multiverses, alternate realities, Dan will get into weird theoretical science and astronomy. The AAC looks forward to this talk by Chief Space Cadet Dan at Atlanta Freethought Hall, Smyrna GA. The AAC needs volunteers badly and to volunteer, please contact Art Zorka, the new observing chair. Daniel Herron is now BoD Chairman and General Board Officer. Please check the Focal Point newsletter and the AtlantaAstronomy.org website for ways to get involved and share your love of the skies with others and be a great amateur astronomer. Membership dues are due in March as a reminder. Stay tuned and looking up as the ACC has many new things happening and exciting events and fun coming soon. See you in September and we wish you clear skies!



The Astronomical League

As a member of the **Atlanta Astronomy Club** you are automatically also a member of the **Astronomical League**, a nation wide affiliation of astronomy clubs. Membership in the AL provides a number of benefits for you. They include:

- * You will receive *The Reflector*, the AL's quarterly newsletter.
- * You can use the Book Service, through which you can buy astronomy-related books at a 10% discount.
- * You can participate in the Astronomical League's Observing Clubs. The Observing Clubs offer encouragement and certificates of accomplishment for demonstrating observing skills with a variety of instruments and objects. These include the Messier Club, Binocular Messier Club, the Herschel 400 Club, the Deep Sky Binocular Club, and many others.

To learn more about the Astronomical League and its benefits for you, visit <http://www.astroleague.org> You may also contact the AAC's Astronomical League Correspondent Art Zorka for more information about the AL's Observing Clubs at artzorka@yahoo.com or by phone at 404-633-8822.



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pssg/ for details and to register for the Star Gaze.

On Friday September 30th there will be a *Solar System Symposium*.

Tom Wilson has put together the following speakers for Solar System Symposium:

Theo Ramakers - Solar Imaging and Observing

Rich Jakiel - Lunar Imaging and Observing

Dan Llewellyn - Advanced Imaging

Brian Combs - Advanced Imaging

Dr. Richard Schumde - Scientific use of data collected by amateur imagers.

Friday evening Jonn Serrie (The Stargazer's Journey) - Jonn will play music during the evening under the starry skies of the DAV.

Current List for Saturday October 1st:

Chris Hetlage - Shuttle, The Final Missions

Tom Crowley - An Introduction to the Interstellar Medium the stuff between the stars

Pixie Bruner - "In the Umbra of the Boys - Women Astronomers"

More to come! Check AtlantaAstronomy.org/pssg/ for updates.

Charlie Elliott Chapter Minutes

by Marie Lott, CE Chapter Recording Secretary

The July 30th meeting of the Charlie Elliott Chapter of the Atlanta Astronomy Club was held in the CEWC Visitor Center in Mansfield, GA at 5 PM with twenty two people in attendance.

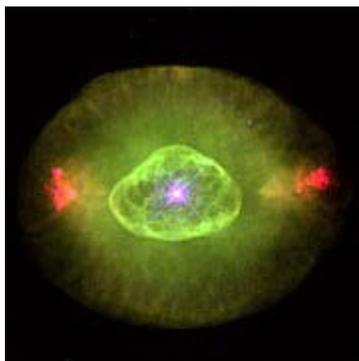
Rich Jakiel gave the evening's feature presentation "Imaging on a Budget", an informative and inspiring survey of DSLR imaging with an 8" Newtonian. His talk is posted online on the CE web site at <http://bit.ly/Jakiel73011>.

Observing supervisor Steven Philips presented "Observing 101", a highlight of current sun, moon and planet rise & set times, observing targets and challenges. In August, Saturn is low in the West in the early evening. By the end of August Venus will be hidden in the glare of the sun. Jupiter rises before midnight and is best viewed in the South before dawn; Mars can also be found well up in the East in the pre-dawn skies. The August lunar libration offers the opportunity to view the maria on the extreme edges of the lunar nearside: Australe, Orientale, Marginis and Smythii. Comet Garrard C/2009 P1 is brightening and is moving into the constellation Sagitta. Asteroid Vesta can be caught travelling through Capricornus.

Small Telescope/Binocular Target List for August:

Globular clusters M10, M12, M13 (Hercules) & M92; planetary nebulas M 27 (Dumbbell) & M57 (Ring); open clusters NGC457 (Owl/ET), M11 (Wild Duck), M24 (Small Sgr Star Cloud) & M25; double stars gold/blue Albireo (Cygnus) & red/yellow Rasalgethi (Herculis).

The featured object for the month is the nebula NGC 6826 - The Blinking Planetary. In a telescope this nebula appears neon green with a central bright star. The brightness of the central star overwhelms the eye when viewed directly, obscuring the surrounding nebula. When an observer looks from side to side, the outer nebula appears to "blink" in and out of



The Blinking Planetary - From Wikipedia Commons

visual perception. Astro-images show two reddish symmetrically-positioned blobs called "FLIERS" (Fast Low-Ionization Emission Regions).

Despite the clouds, 16 individuals made it with 7 scopes and a few binoculars to the observing field.

The next meeting of the chapter will be Saturday, August 27, 2011 at 5 PM in the Charlie Elliott Visitor Center. Dr. Richard Schumde will present a talk entitled "Jupiter Tonight".

From The President's Desk

VOLUNTEERS NEEDED!

Soon schools will be starting a new year and we will have a significant increase in the number of requests for astronomy programs for the schools. We need you to help out with these activities. You don't need to be a rocket scientist or astronomy expert. Even as a beginner in the club you know much more than the general public about astronomy. The rewards are really great when you see a student, who may be otherwise bored with school, light up and say "WOW"! Then they have a million questions and we have them hooked on science and astronomy. It's a great feeling to inspire the next generation of explorers and help them discover the wonders of the universe.

The club also needs help in other areas as well. All of our club officers and board members do a fantastic job, but they can always use some help keeping the club going. Other areas that need help are:

*Publication of our newsletter "The Focal Point".

*Programs: Arranging for interesting subjects & speakers.

*Club observing events and programs.

*Peach State Star Gaze (PSSG) our biggest event and fundraiser.

*Georgia Astronomy in State Parks (GASP).

Please consider becoming a volunteer. It only takes a few minutes out of your day and it can make a big difference in the world by encouraging more people to become scientifically literate.

Mark Banks, President AAC

2012 - DOOM or DUMB?

By Sharon Carruthers, AAC Treasurer

Part 7 - Other 2012 Scenarios

In the first six parts of this series, I have described the primary "2012 Doom" scenarios:

1) Rogue Planet (Nibiru/Planet X), 2) Binary Star (Nemesis), 3) Pole Flips or Reversals - Magnetic & Physical, 4) Galactic Alignments - Sun/Earth/Galactic Center on the Winter Solstice & Solar System with Galactic Equator.

Several other possibilities have been put forward:

1) Planetary Alignment, 2) Solar storms, 3) Comets and Asteroids (Comet Elenin), 4) Supernovae or Hypernovae, 5) Impact with other Galaxies.

1) Planetary Alignment - Perhaps triggered by the word "alignment" and flashing back to the "Jupiter Effect", a 1974 book by John Gribben and Stephen Plagemann that predicted that a Great Conjunction (a Jupiter and Saturn alignment) in 1982 would cause catastrophes on Earth, some have postulated 2012 will be caused by a planetary alignment. A Great Conjunction occurs every 18-20 years; the last one (with Mars) was in May 2000 and the next will be in December 2020. As the world has not descended into a chaos of earthquakes and tsunamis every two decades, this refutes itself. There will be no major planetary alignments in 2012. While Jupiter is the largest non-solar object in the Solar System, when it is

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near opposition, it exerts less than 1% that the gravitational effect of the Moon on the Earth.

2) Solar Storms - The Sun has an (approximately) 11 year cycle during which the magnetic field lines are dragged around the Sun (because its equator is spinning faster than the magnetic poles). This stress causes a build up of energy and kinks in the magnetic flux form, which are forced to the surface as coronal loops. Sunspots, which are relatively cooler areas, form at the foot of these coronal loops. When these loops break free of the Sun's surface they may generate X-rays. When the X-rays (which can reach Earth within 8 minutes) interact with the upper atmosphere, they can absorb short wave radio signals (in the high frequency range) and possibly block global communications.

Coronal Mass Ejections (CME) are an ejection of the corona consisting of a plasma made up primarily of electrons and protons. Being particles, and not just energy, they may take several hours to reach the Earth. CME events, along with solar flares, can disrupt radio transmissions, cause power outages by damaging generators and transformers, and damage satellites and electrical transmission lines.

A severe geomagnetic storm in 1989 caused the collapse of the Hydro-Quebec power grid and necessitated the shut down of four of the Navy's navigational satellites for a week.

So, yes, it is entirely possible that solar storms, which were due to peak in the 2010-2014 time frame, could pose some hazards to Earth. NASA had issued warnings that this solar cycle could be very powerful, but so far it has been very weak. There is even speculation that the Sun has entered a "Maunder Minimum", a period of reduced solar activity, first noted in 1645 to 1715 and named for Edward & Annie Maunder, who first described it. This only demonstrates that we know too little about solar cycles to make any prediction that a solar storm will occur or will occur on any specific date.

Should one occur, the primary harm would be to our artificial satellites and our electrical grids. The fantasy that great tongues of high energy flares will "lick the face of the Earth" are not possible from our very stable Sun.

3) Comets & Asteroids (Comet Elenin) - These scenarios propose that the Earth will be impacted by a comet or asteroid; or that it will be harmed by passing through the comet's tail. Impacts are a legitimate danger. There is evidence that 65 million years ago, an asteroid at least 6 miles in diameter caused the Cretaceous-Tertiary (K-T) mass extinctions. The Chicxulub crater in Mexico is the remnant of this impact.

Spaceguard, a joint project of the U.S., the European Union and other nations is currently scanning for Near Earth Objects. In the U.S., NASA has a congressional mandate to catalogue all Potentially Hazardous Objects (PHO's) that are in Earth crossing orbits and are at least 1 kilometer (0.6 miles) wide, as the impact could produce catastrophic effects. As of October 2008, 982 have been detected, but no PHO's have been observed that would pose a threat in 2012 or for decades after.

Comet Elenin (C/2010 X1) a long period comet (>10,000 years) which is expected to peak near magnitude 6 in mid-September 2011, is being touted as either Planet X/Nibiru or a "planet killer" comet. It will make its closest approach to the Earth on 16 October 2011, at a distance of 0.2338 AU (or slightly closer than the planet Venus) and may pass out of the Solar System. Astronomers who have mapped its trajectory say that, at this distance, it will pose no threat to Earth.

Asteroid (99942 Apophis), at 885 feet, may pose the greatest risk. There is a 1 in 250,000 chance that it could hit either the Earth or Moon at its closest approach in 2036. Asteroid (89959) 2002 NT may pose a threat in 100 years; and asteroid (29075) 1950 DA has the greatest risk of known objects but not until 2880.

The tail of a comet is composed of water vapor, thin gasses and fine dust. We pass through the cometary debris regularly and get beautiful meteor

Seven Signs of Bogus Science

1. The discoverer pitches the claim directly to the media.
2. The discoverer says that a powerful establishment is trying to suppress his or her work.
3. The scientific effect involved is always at the very limit of detection.
4. Evidence for a discovery is anecdotal.
5. The discoverer says a belief is credible because it has endured for centuries.
6. The discoverer has worked in isolation.
7. The discoverer must propose new laws of nature to explain an observation.

Voodoo Science: The Road from Foolishness to Fraud

Robert L. Park, Ph.D, Oxford University Press, 2002

<http://www.quackwatch.com/01QuackeryRelatedTopics/signs.html>

showers. The Orionids are produced by the tail of Halley's Comet; and the Leonids by the tail of Comet Swift-Tuttle.

4) Supernovae or Hypernovae - There are two stars close to Earth that are due to go supernova or hypernova "soon". The nearest, at 520 lightyears, is the red giant Betelgeuse, one of the largest and most luminous stars known. It is predicted to explode in the next 1,000 years. The monster star Eta Carinae, at 7,500 ly, is expected to go hypernova within the next million years. The risk is that they would eject gamma rays (possibly a Gamma Ray burst by Eta Carinae). Scientists believe that terrestrial lifeforms would be protected from gamma rays by the atmosphere, and from other cosmic rays by the magnetosphere. The upper atmosphere, the ozone layer, spacecraft, satellites, and any astronauts in space, would be at risk. According to Phil Plait, a supernova would have to be closer than 25 light years to do catastrophic damage to the Earth or its ozone layer.

Neither star has a spin axis precisely aimed at Earth, so we wouldn't be in direct line with a narrow beam of concentrated gamma rays. It has been estimated that the Earth has a one percent chance over 10 billion years of being hit by dangerous gamma rays from a supernova.

Once again, we are in the area of possibility, but unable to make any prediction that they will occur or will occur on any specific date.

5) Impact with other Galaxies - Well, yep. Our Milky Way Galaxy is moving towards and will be gobbled up by the much larger Andromeda Galaxy..... in anywhere from 2 to 6 billion years. A little too late for our Winter Solstice 2012 timeline.

With the vast distances between the stars in galaxies, astronomers speculate that this may not even have an impact on the solar systems in the galaxies, let alone the stars and planets. They would simply pass by each other. Nothing to worry about here.

Next month: 2012 - DOOM OR DUMB? Part 8 - Cosmophobia - Why the Panic over 2012?

(Opinions expressed in this series are those of the author; not of the Atlanta Astronomy Club, its Board, its membership, nor the editors of the *Focal Point*.) *Editor's Note: But they do happen to be my opinion.*

WISE Discovers Coolest Class of Stars

NASA/JPL News Release - August 23, 2011

Scientists using data from NASA's Wide-field Infrared Survey Explorer (WISE) have discovered the coldest class of star-like bodies, with temperatures as cool as the human body.

Astronomers hunted these dark orbs, termed Y dwarfs, for more than a decade without success. When viewed with a visible-light telescope, they are nearly impossible to see. WISE's infrared vision allowed the telescope to finally spot the faint glow of six Y dwarfs relatively close to our sun, within a distance of about 40 light-years.

"WISE scanned the entire sky for these and other objects, and was able to spot their feeble light with its highly sensitive infrared vision," said Jon Morse, Astrophysics Division director at NASA Headquarters in Washington. "They are 5,000 times brighter at the longer infrared wavelengths WISE observed from space than those observable from the ground."

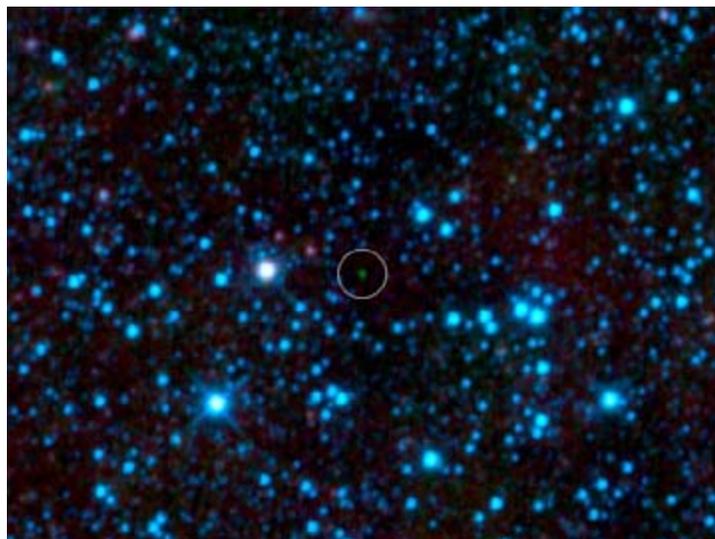


This artist's conception illustrates what a "Y dwarf" might look like. Y dwarfs are the coldest star-like bodies known, with temperatures that can be even cooler than the human body. NASA's Wide-field Infrared Survey Explorer uncovered these elusive objects for the first time, using its heat-sensing, infrared vision. The telescope found six Y dwarfs, ranging in atmospheric temperatures from 350 degrees Fahrenheit (175 degrees Celsius) to less than about 80 degrees Fahrenheit (25 degrees Celsius). Image credit: NASA/JPL-Caltech.

The Y's are the coldest members of the brown dwarf family. Brown dwarfs are sometimes referred to as "failed" stars. They are too low in mass to fuse atoms at their cores and thus don't burn with the fires that keep stars like our sun shining steadily for billions of years. Instead, these objects cool and fade with time, until what little light they do emit is at infrared wavelengths.

Astronomers study brown dwarfs to better understand how stars form, and to understand the atmospheres of planets beyond our solar system. The atmospheres of brown dwarfs are similar to those of gas-giant planets like Jupiter, but they are easier to observe because they are alone in space, away from the blinding light of a parent star.

So far, WISE data have revealed 100 new brown dwarfs. More discoveries are expected as scientists continue to examine the enormous quantity of data from WISE. The telescope performed the most advanced survey of the sky at infrared wavelengths to date, from Jan. 2010 to Feb. 2011, scanning the entire sky about 1.5 times.



NASA's Wide-field Infrared Survey Explorer, or WISE, has uncovered the coldest brown dwarf known so far (green dot in very center of this infrared image). Called WISE 1828+2650, this chilly star-like body isn't even as warm as a human body, at less than about 80 degrees Fahrenheit (25 degrees Celsius). Like other brown dwarfs, it began life like a star, collapsing under its own weight into a dense ball of gas. But, unlike a star, it didn't have enough mass to fuse atoms at its core, and shine steadily with starlight. Instead, it has continued to cool and fade since its birth, and now gives off only a feeble amount of infrared light. WISE's highly sensitive infrared detectors were able to catch the glow of this object during its all-sky scan, which lasted from Jan. 2010 to Feb. 2011. WISE 1828+2650 is located in the constellation Lyra. The blue dots are a mix of stars and galaxies. This view shows three of WISE's four infrared channels, color-coded blue, green and red, with blue showing the shortest infrared wavelengths and red, the longest. Image credit: NASA/JPL-Caltech/UCLA.

Of the 100 brown dwarfs, six are classified as cool Y's. One of the Y dwarfs, called WISE 1828+2650, is the record holder for the coldest brown dwarf, with an estimated atmospheric temperature cooler than room temperature, or less than about 80 degrees Fahrenheit (25 degrees Celsius).

"The brown dwarfs we were turning up before this discovery were more like the temperature of your oven," said Davy Kirkpatrick, a WISE science team member at the Infrared Processing and Analysis Center at the California Institute of Technology in Pasadena, Calif. "With the discovery of Y dwarfs, we've moved out of the kitchen and into the cooler parts of the house."

Kirkpatrick is lead author of a paper appearing in the *Astrophysical Journal Supplement Series*, describing the 100 confirmed brown dwarfs. Michael Cushing, a WISE team member at NASA's Jet Propulsion Laboratory in Pasadena, Calif., is lead author of a paper describing the Y dwarfs in the *Astrophysical Journal*.

The Y dwarfs are in our sun's neighborhood, from approximately nine to 40 light-years away. The Y dwarf approximately nine light-years away, WISE 1541-2250, may become the seventh closest star system, bumping Ross 154 back to eighth. By comparison, the star closest to our solar system, Proxima Centauri, is about four light-years away.

"Finding brown dwarfs near our sun is like discovering there's a hidden house on your block that you didn't know about," Cushing said. "It's thrilling to me to know we've got neighbors out there yet to be discovered. With WISE, we may even find a brown dwarf closer to us than our closest known star."

Once the WISE team identified brown dwarf candidates, they turned to NASA's Spitzer Space Telescope to narrow their list. To definitively confirm them, the WISE team used some of the most powerful telescopes

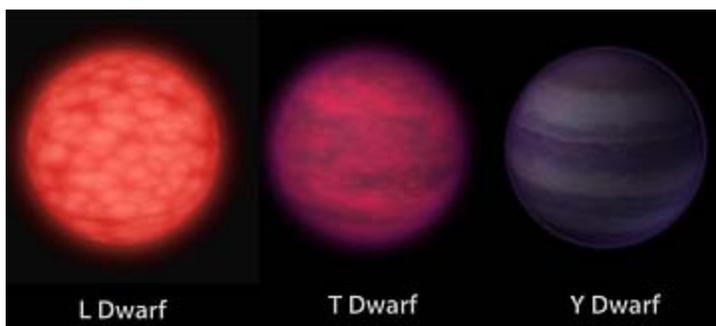
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on Earth to split apart the objects' light and look for telltale molecular signatures of water, methane and possibly ammonia. For the very coldest of the new Y dwarfs, the team used NASA's Hubble Space Telescope. The Y dwarfs were identified based on a change in these spectral features compared to other brown dwarfs, indicating they have a lower atmospheric temperature.

The ground-based telescopes used in these studies include the NASA Infrared Telescope Facility atop Mauna Kea, Hawaii; Caltech's Palomar Observatory near San Diego; the W.M. Keck Observatory atop Mauna Kea, Hawaii; and the Magellan Telescopes at Las Campanas Observatory, Chile, among others.

JPL manages WISE for NASA's Science Mission Directorate. The principal investigator is Edward Wright at UCLA. The WISE satellite was decommissioned in 2011 after completing its sky survey observations. The mission was selected under NASA's Explorers Program managed by the Goddard Space Flight Center in Greenbelt, Md. The science instrument was built by the Space Dynamics Laboratory in Logan, Utah, and the spacecraft by Ball Aerospace & Technologies Corp., in Boulder, Colo. Science operations and data processing are at the Infrared Processing and Analysis Center at the California Institute of Technology. JPL is a division of the California Institute of Technology in Pasadena.

More information is online at <http://www.nasa.gov/wise>, <http://wise.astro.ucla.edu> and <http://jpl.nasa.gov/wise>.



This artist's conception illustrates what brown dwarfs of different types might look like to a hypothetical interstellar traveler who has flown a spaceship to each one. Brown dwarfs are like stars, but they aren't massive enough to fuse atoms steadily and shine with starlight - as our sun does so well.

On the left is an L dwarf, in the middle is a T dwarf, and on the right is a Y dwarf. The objects are progressively cooler in atmospheric temperatures as you move from left to right. Y dwarfs are the newest and coldest class of brown dwarfs and were discovered by NASA's Wide-field Infrared Survey Explorer, or WISE. WISE was able to detect these Y dwarfs for the first time because it surveyed the entire sky deeply at the infrared wavelengths at which these bodies emit most of their light.

The L dwarf is seen as a dim red orb to the eye. The T dwarf is even fainter and appears with a darker reddish, or magenta, hue. The Y dwarf is dimmer still. Because astronomers have not yet detected Y dwarfs at the visible wavelengths we see with our eyes, the choice of a purple hue is done mainly for artistic reasons. The Y dwarf is also illustrated as reflecting a faint amount of visible starlight from interstellar space.

In this rendering, the traveler's spaceship is the same distance from each object. This illustrates an unusual property of brown dwarfs - that they all have the same dimensions, roughly the size of the planet Jupiter, regardless of their mass. This mass disparity can be as large as fifteen times or more when comparing an L to a Y dwarf, despite the fact that both objects have the same radius.

The three brown dwarfs also have very different atmospheric temperatures. A typical L dwarf has a temperature of 2,600 degrees Fahrenheit (1,400 degrees Celsius). A typical T dwarf has a temperature of 1,700 degrees Fahrenheit (900 degrees Celsius). The coldest Y dwarf so far identified by WISE has a temperature of less than about 80 degrees Fahrenheit (25 degrees Celsius). Image credit: NASA/JPL-Caltech



Solar System Size Surprise

by Dr. Tony Phillips

News flash: You may be closer to interstellar space than you previously thought.

A team of researchers led by Tom Krimigis of the Johns Hopkins University Applied Physics Laboratory announced the finding in the June 2011 issue of *Nature*. The complicated title of their article, "Zero outward flow velocity for plasma in a heliosheath transition layer," belies a simple conclusion: The solar system appears to be a billion or more kilometers smaller than earlier estimates.

The recalculation is prompted by data from NASA's Voyager 1 probe, now 18 billion kilometers from Earth. Voyagers 1 and 2 were designed and built and are managed by NASA's Jet Propulsion Laboratory. Aging but active, the spacecraft have been traveling toward the stars since 1977 on a heroic mission to leave the solar system and find out what lies beyond.

To accomplish their task, the Voyagers must penetrate the outer walls of the heliosphere, a great bubble of plasma and magnetism blown in space by the solar wind. The heliosphere is so big, it contains all the planets, comets, and asteroids that orbit the sun. Indeed many astronomers hold that the heliosphere defines the boundaries of the solar system. Inside it is "home." Outside lies the Milky Way. For 30+ years, the spacecraft have been hurtling toward the transition zone. Voyager 1 is closing in.

Much of Voyager 1's long journey has been uneventful. Last year, however, things began to change. In June 2010, Voyager 1 beamed back a startling number: zero. That's the outward velocity of the solar wind where the probe is now.

"This is the first sign that the frontier is upon us," says Krimigis.

Previously, researchers thought the crossing was still years and billions of kilometers away, but a new analysis gave them second thoughts. Krimigis and colleagues combined Voyager data with previously unpublished measurements from the Cassini spacecraft. Cassini, on a mission to study Saturn, is nowhere near the edge of the solar system, but one of its instruments can detect atoms streaming into our solar system from the outside. Comparing data from the two locations, the team concluded that the edge of the heliosphere lies somewhere between 16 to 23 billion kilometers from the sun, with a best estimate of approximately 18 billion kilometers.

Because Voyager 1 is already nearly 18 billion kilometers out, it could cross into interstellar space at any time—maybe even as you are reading this article.

"How close are we?" wonders Ed Stone, Caltech professor and principal investigator of the

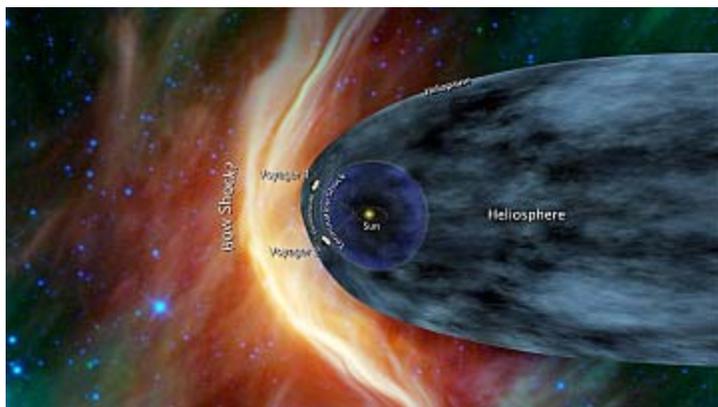
Voyager project since the beginning. "We don't know, but Voyager 1 speeds outward a billion miles every three years, so we may not have long to wait."

Stay tuned for the crossing.

For more about the missions of Voyager 1 and 2, see <http://voyager.jpl.nasa.gov/>. Another Voyager project scientist, Merav Opher, is

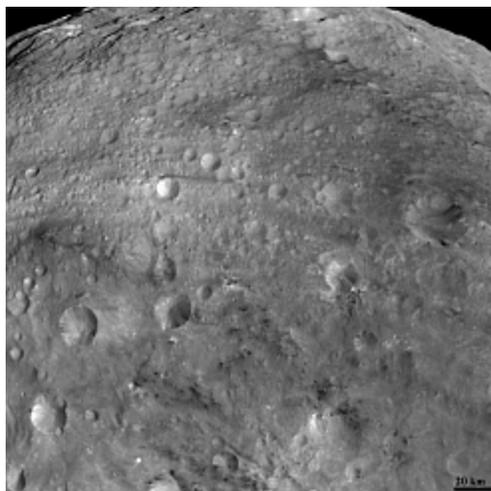
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the guest on the newest Space Place Live cartoon interview show for kids at <http://spaceplace.nasa.gov/space-place-live>.



This artist's concept shows NASA's two Voyager spacecraft exploring a turbulent region of space known as the heliosheath, the outer shell of the bubble of charged particles around our sun. Image credit: NASA/JPL-Caltech.

Bright and Dark Material on Vesta



August 31, 2011 - PASADENA, Calif. - NASA's Dawn spacecraft obtained this image of Vesta with its framing camera on August 12, 2011. This image was taken through the framing camera's clear filter. The image has a resolution of about 260 meters per pixel. Image credit: NASA/JPL-Caltech/UCLA/MPS/DLR/IDA

Atlanta Astronomy Club Online

While this newsletter is the official information source for the Atlanta Astronomy Club, it is only up to date the day it is printed. So if you want more up to date information, go to our club's website. The website contains pictures, directions, membership applications, events updates and other information. <http://www.atlantaastronomy.org> You can also follow the AAC on Facebook by joining the AAC group, and on Twitter at <http://twitter.com/atlastro>.

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Elliott Webmaster: Theo Ramakers 770-464-3777
webmaster@CEastronomy.org

Georgia Astronomy in State Parks:

PSSG Chairman: Peter Macumber pmacumber@nightsky.org

PSSG Co-Chair: Joanne Cirincione
starrynights@AtlantaAstronomy.org

Sidewalk Astronomy: Brad Isley
sidewalkastronomy@AtlantaAstronomy.org

Light Trespass: Open - Contact Mark Banks if you would like to volunteer for this position

Woodruff Observ. Coordinator: Sharon Carruthers
Treasurer@AtlantaAstronomy.org

AAC Webmaster: Daniel Herron observing@AtlantaAstronomy.org

The Atlanta Astronomy Club, Inc., the South's largest and oldest astronomical society, meets at 8:00 P.M. on the Friday closest to full moon of each month at Emory University's White Hall or occasionally at other locations or times. Membership fees are \$30 (\$42) for a family or single person membership. College Students membership fee is \$15 (\$27). These fees are for a one year membership (\$12 per year extra charge to receive a printed *Focal Point* by mail).

Magazine subscriptions to *Sky & Telescope* or *Astronomy* can be purchased through the club for a reduced rate. The fees are \$33 for *Sky & Telescope* and \$34 for *Astronomy*. Renewal forms will be sent to you by the magazines. Send the renewal form along with your check to the Atlanta Astronomy Club treasurer.

The Club address: Atlanta Astronomy Club, Inc., P.O. Box 76155, Atlanta, GA 30358-1155.

AAC Web Page: <http://www.AtlantaAstronomy.Org>. Send suggestions, comments, or ideas about the website to webmaster@AtlantaAstronomy.org. Also send information on upcoming observing events, meetings, and other events to the webmaster.

Calendar by Tom Faber (Times EDT/EST unless noted)

AAC Events are listed in BOLD

- September 4th, Sunday: Moon First Quarter.
- September 9th, Friday: **AAC Meeting at AFS, 8PM.** Mercury near Regulus.
- September 12th, Monday: **October Focal Point Deadline.** Full Moon.
- September 20th, Tuesday: Moon Last Quarter.
- September 23rd, Friday: Equinox at 5:05AM.
- September 24th, Saturday: **Charlie Elliott Chapter Mtg - 5PM.**
- September 25th, Sunday: The Peach State Star Gaze opens at 12:00PM.**
- September 25th, Sunday: Uranus at Opposition.
- September 27th, Tuesday: New Moon.
- September 28th, Wednesday: Mercury at Superior Conjunction.

October 2nd, Sunday: The Peach State Star Gaze closes at 12:00PM.

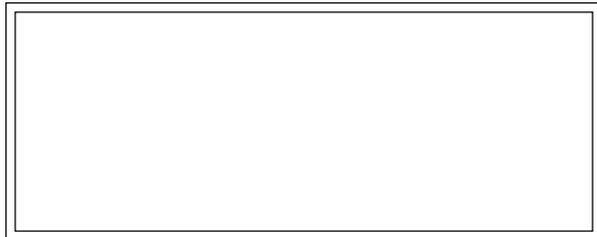
- October 3rd, Monday: Moon First Quarter.
- October 8th, Saturday: Draconids Meteors.
- October 11th, Tuesday: Full Moon.
- October 14th, Friday: **AAC Meeting at AFS, 8PM.**
- October 19th, Wednesday: Moon Last Quarter.
- October 21st, Friday: Orionids Meteors.
- October 22nd, Saturday: **Charlie Elliott Chapter Mtg - 5PM.**
- October 26th, Wednesday: New Moon.
- October 28th, Friday: Jupiter at Opposition.
- November 1st, Wednesday: Mercury near Venus.
- November 2nd, Tuesday: Moon First Quarter.
- November 5th, Saturday: **Charlie Elliott Chapter Mtg - 5PM.**
- November 10th, Thursday: Full Moon.

Atlanta Astronomy Club Listserv

Subscribe to the Atlanta Astronomy Club Mailing List: The name of the list is: AstroAtlanta. The address for messages is: AstroAtlanta@yahoogroups.com . To add a subscription, send a message to: AstroAtlanta-subscribe@yahoogroups.com . This list is owned by Lemmy Abbey.

Focal Point Deadline and Submission Information

Please send articles, pictures, and drawings in electronic format on anything astronomy, space, or sky related to Tom Faber at focalpoint@atlantaastronomy.org. Please send images separate from articles, not embedded in them. Articles are preferred as plain text files but Word documents or PDFs are okay. You can submit articles anytime up to the deadline. **The deadline for October is ***Monday***, September 12th. Submissions will not be accepted after the deadline.**



FIRST CLASS



www.beclage.com



We're here to help! Here's how to reach us:

Newsletter of The Atlanta Astronomy Club, Inc.



The Focal Point

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