

Star Gazer News

Newsletter of the Delmarva Stargazers

www.delmarvastargazers.org

Prez comments...for the last time as President of Delmarva Star Gazers

Wow, my second go around as president of the Delmarva Stargazers is about to come to a close. It has once more been a pleasure to serve our club and its membership. I turn the helm over to one of the original members of the club who will also be taking his second turn as president. I know we'll be in good hands under Lyle Jones' leadership but remember it takes your help to make our club work.

I'm also excited that we have a new face stepping up as president elect in Chuck Jennings. Chuck embellishes what our club is all about, observing the night sky while enjoying family and friends. Chuck and his family have reenergized our club to get out and do more observing. I look forward to working with both Lyle and Chuck to help our club be even better.

No matter who holds the office of president, the key to the club working is you, the membership. Being an active member is more than paying dues and attending meetings or star parties. Giving a presentation at a meeting, writing a newsletter article, helping assemble mirror stands or making coffee at a star party are they type of things I consider part of being an active member. Don't be shy to jump in and join us, you'll find us very welcoming to anyone who wants to help and you'll get more out of being a Delmarva Stargazer by doing so.

We're all amateurs and most of us feel a little discomfort standing up in front of people to give a presentation the first few times. You'll find everyone appreciates the effort and each time gets easier plus you'll find researching a subject will help you learn this hobby.

We'll hold our **last meeting at Christiana Care starting at 6:30 PM June 7th**. The Sue French presentation will start at our normal meeting time of 7 PM. I'll have her wrap up by 7:45 to allow a few minutes for questions. We will end at 8 PM. This will be our last formal meeting until September. In the mean time we will look for a new meeting place that fills our requirements. Hope to see you there. Jerry Truitt



Come to the June meeting for the Election and Installation of Club Officers for 2011-2012

Special Time 6:30-8:00 PM



Upcoming Events:			
★ Meeting !	June 7 th	6:30 PM	SHWC
★ Observing !	June 4 th	Dusk	Eq. Cntr & BB

Delmarva Star Gaze - 2011 Thoughts...



The party began under hot and muggy skies. In the days leading up to Thursday morning the South Land had been battered by outbreaks of hundreds of tornadoes - many of them among the strongest wind and largest size on record. I am sure many of our normal Thursday participants delayed their arrival due to the severe weather forecast for the daytime hours of Thursday.



The skies over Tuckahoe were dark and threatening as I arrived around 11:00AM with truck and trailer loaded with all food, drink, door prizes, tools, telescopes...all the paraphernalia necessary for a star party. The club's trailer had been delivered by Keith Lohmeyer earlier in the morning...it holds the cooking tools. Thanks, Keith, for taking time out of your busy day to make the party suc-

cessful.

Party goers (or comers) began arriving mid afternoon and so did the rain showers. Thankfully we were spared the destructive weather conditions our neighbors in Alabama, Mississippi, Georgia, Tennessee, and the Carolinas had experienced. The worst we received was some rain showers. By sunset



the sky was clear...very clear, and the mugginess of the AM was gone entirely.

The Truitts treated us to their now famous chicken noodle soup for dinner...along with Karen Harrison's cakes for dessert. These contributions make our parties a pleasure...thanks to all who contributed.

David Holden, from Sky Stones (the meteorite man from Wheeling, WV) displayed his substantial store of meteorites for all to peruse and purchase. Many of us now have a piece of the Universe that is "from outer space"... a little treasure for the kids, grandchildren, stocking stuffers or for just looking at and knowing you now own a meteorite. Dave, thanks for coming and sharing your hobby.



Viewing was Friday night...and sula in Spring, night. So we told some lies, of us drifted ing to my suddenly there was large reefer the observing up - to the



very good the first few hours then, as is normal for the Penin- the sky clouded over around mid- retreated to the coffee pots, drank some more coffee and many off for some sleep. I was walk- trailer around 2:45AM and sud- my shadow projected onto the trailers that sit on the edge of field. For some reason I looked northeast - just in time to see a

huge greenish fireball descend to the treeline - Folks, there were trailers and drippers of green stuff streaming from the fireball as it descended...You missed a beauty! The eastern, southern, and was exceptionally clear and steady from until daybreak and some of us made use of window. Friday's daytime skies were very blue all day - which isn't necessar- sign for the coming night sky. Around



& Lima Bean ready...a large (It musta been the pot was midnight). did set in and again for we had good viewing conditions...

until the astronomy gods decided we had seen enuf and promptly put a cloak of clouds twixt us and the stars. Time for some attempted sleep...welcome sleep.

Saturday morning was cloudy and downright cold...a stiff wind was blowing from all direc- tions...the weather folks called it a "weak high level disturbance passing through". Around 10:00AM the skies opened and welcome warm sun- shine bathed the folks of Tuckahoe once again. Our Lunt solar scopes were set up for all to view the sun's constantly changing appearance. I am amazed at how much activity - how much change - is to be seen on the sun every time we point those little scopes toward Ol Sol.

As usual our swap meet was a disappointment for me. If anyone has suggestions on how to improve the quantity and quality of



northern sky around 3:45 that viewing clear and ily a good 5PM the Ham soup was pot of it good 'cause empty around But the sun clear sky a few hours seeing and



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the swap meet please email or call. Swap meets can be a lot of fun but it seems we just don't get the level of interest required for making them as successful and interesting as they could be.

Saturday afternoon was centered around the now-standard-and-required-fishfry. Thanks to all who helped to cut on-

ions, fry the fish and hushpuppies, prepare the beans and potato salad, and the cleanup afterwards. Without you there could not be a fishfry...Thanks!

Door prizes were plentiful and many of you went home with at least one prize... some were lucky enuf to snag more than one.



Our raffle for the 9mm 100 degree FOV eyepiece managed to cover the cost of the eyepiece plus a penny...\$190.00 collected vs the discounted purchase price of \$189.99. So, this may be



the last time for an eyepiece raffle. Congratulations to the winner...you have a very nice eyepiece for less than \$10.00.

Star parties are a lot of work to prepare and a lot fun to experience. The camaraderie that develops over seventeen years of Delmarva Star Gazes and fifteen years of No Frills is a truly enjoyable pleasure of life that is difficult to duplicate. Thank you to all who come and help us make Delmarva Star Gazes enjoyable.

See you in the Fall for No Frills. Don...

StarGaze 2011

Myles Rice

I arrived at the Delmarva Star Party around 2:30 pm on Thursday. The drive from Woodbridge was pleasant with no traffic. As soon as I arrived, it started to rain but the rain lasted only about 15 to 30 minutes. That went on all afternoon until about 6 or 6:30. Thankfully, that was the only rain we had all weekend.

Thursday night, the clouds cleared out about 10 pm. I observed roughly until 1 am. The seeing was great with no humidity, and the temperature was in the low 50's. I was able to view the normal objects M13, M81, M82, M44, the Leo Triplets M65, M66, and MG3628. I also viewed for the first time M92. Oh, and I all most forgot; I tried to use my in-telliscope hand held locator, but could not get it to work. It was great to star hop after using a goto scope for the past 2 years.

Friday was warm and sunny with temps in the high 60's and just a few high clouds which cleared out early in the evening. The night sky was similar to Thursday night but the clouds came in around 1 am, so I'm told (can't verify that since I went to bed at 11 pm). I was able to view Saturn, M97, M108, M86, M59, M100, M3, M67, Ghost of Jupiter, The Cat Nebula (not the Cat Eye Nebula).

Saturday was a cloudy and very windy day, with the temperatures in the mid 60's. It cleared up about 9 pm and the sky was very clear, but it was still windy and cold. I observed until 12:30. I checked the temperature around 11:00 and it was 46 degrees. The dew monster arrived just after sun set. I was able to view NGC4361, M60, M90, M91, M84, M86, M104, M48, M59, M95 and M96.

On Saturday afternoon a couple of people helped me figure out what was wrong with my scope. It turned out that the azimuth encoder was bent. We got it straightened a bit and I was able to use my hand held locator. I already contacted Orion and they will send me a new encoder. Hopefully it will arrive before Saturday for Astronomy Day.

Over all, the Delmarva Star Party was a great success. I've now had two star parties back to back, where I was able to observe all three nights (the other star party was the fall 2010 Delmarva Star Party last October). I would recommend the Delmarva Star Party to any NOVAC member both because of the short drive (1 hour and 30 mins from my house in Woodbridge, 103 miles) and because of the hospitality extended by the members of the Delmarva Stargazers.

Hope to see more NOVAC member for the Fall Delmarva Star Party.
Clear Skies, Myles Rice

Magazine Subscriptions

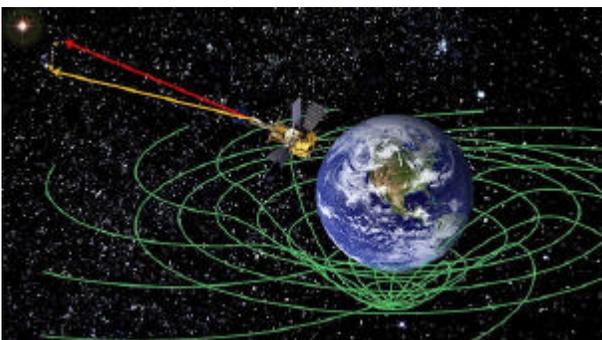
As a paid member of DMSG, you can sign up/renew your S&T or Astronomy mags through the club for a discount over private rate. S&T, reg. \$42.95, is \$32.95 thru DMSG, Astronomy, reg. \$44, is \$34. See Michael Lecuyer for details.

NASA Announces Results of Epic Space-Time Experiment

Einstein was right again. There is a space-time vortex around Earth, and its shape precisely matches the predictions of Einstein's theory of gravity.

Researchers confirmed these points at a press conference today at NASA headquarters where they announced the long-awaited results of Gravity Probe B (GP-B).

"The space-time around Earth appears to be distorted just as general relativity predicts," says Stanford University physicist Francis Everitt, principal investigator of the Gravity Probe B mission.



At left is an artist's concept of GP-B measuring the curved spacetime around Earth.

"This is an epic result," adds Clifford Will of Washington University in St. Louis. An expert in Einstein's theories, Will chairs an independent panel of the National Research Council set up by NASA in 1998 to monitor and review the results of Gravity Probe B. "One day," he predicts, "this will be written up in textbooks as one of the classic experiments in the history of physics."

Time and space, according to Einstein's theories of relativity, are woven together, forming a four-dimensional fabric called "space-time." The mass of Earth dimples this fabric, much like a heavy person sitting in the middle of a trampoline. Gravity, says Einstein, is simply the motion of objects following the curvaceous lines of the dimple.

If Earth were stationary, that would be the end of the story. But Earth is not stationary. Our planet spins, and the spin should twist the dimple, slightly, pulling it around into a 4-dimensional swirl. This is what GP-B went to space in 2004 to check. The idea behind the experiment is simple:

Put a spinning gyroscope into orbit around the Earth, with the spin axis pointed toward some distant star as a fixed reference point. Free from external forces, the gyroscope's axis should continue pointing at the star--forever. But if space is twisted, the direction of the gyroscope's axis should drift over time. By noting this change in direction relative to the star, the twists of space-time could be measured.



In practice, the experiment is tremendously difficult.

The four gyroscopes in GP-B are the most perfect spheres ever made by humans. These ping pong-sized balls of fused quartz and silicon are 1.5 inches across and never vary from a perfect sphere by more than 40 atomic layers. If the gyroscopes weren't so spherical, their spin axes would wobble even without the effects of relativity.

According to calculations, the twisted space-time around Earth should cause the axes of the gyros to drift merely 0.041 arcseconds over a year. An arcsecond is 1/3600th of a degree. To measure this angle reasonably well, GP-B needed a fantastic precision of 0.0005 arcseconds. It's like measuring the thickness of a sheet of paper held edge-on 100 miles away.

"GP-B researchers had to invent whole new technologies to make this possible," notes Will.

They developed a "drag free" satellite that could brush against the outer layers of Earth's atmosphere without disturbing the gyros. They figured out how to keep Earth's magnetic field from penetrating the spacecraft. And they created a device to measure the spin of a gyro--without touching the gyro. More information about these technologies may be found in the Science@NASA story "[A Pocket of Near-Perfection](#)."

Pulling off the experiment was an exceptional challenge. But after a year of data-taking and nearly five years of analysis, the GP-B scientists appear to have done it.

"We measured a geodetic precession of 6.600 plus or minus 0.017 arcseconds and a frame dragging effect of 0.039 plus or minus 0.007 arcseconds," says Everitt.

For readers who are not experts in relativity: *Geodetic precession* is the amount of wobble caused by the static mass of the Earth (the dimple in spacetime) and the *frame dragging effect* is the amount of wobble caused by the spin of the Earth (the twist in spacetime). Both values are in precise accord with Einstein's predictions.

"In the opinion of the committee that I chair, this effort was truly heroic. We were just blown away," says Will.

The results of Gravity Probe B give physicists renewed confidence that the strange predictions of Einstein's theory are indeed correct, and that these predictions may be applied elsewhere. The type of spacetime vortex that exists around Earth is duplicated and magnified elsewhere in the cosmos-- around massive neutron stars, black holes, and active galactic nuclei.

"If you tried to spin a gyroscope in the severely twisted space-time around a black hole," says Will, "it wouldn't just gently precess by a fraction of a degree. It would wobble crazily and possibly even flip over."

In binary black hole systems--that is, where one black hole orbits another black hole--the black holes themselves are spinning and thus behave like gyroscopes. Imagine a system of orbiting, spinning, wobbling, flipping black holes! That's the sort of thing general relativity predicts and which GP-B tells us can really be true.

The scientific legacy of GP-B isn't limited to general relativity. The project also touched the lives of hundreds of young scientists:

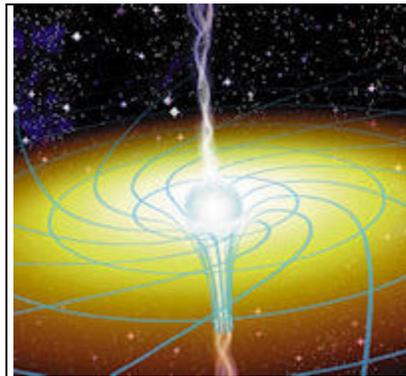
"Because it was based at a university many students were able to work on the project," says Everitt. "More than 86 PhD theses at Stanford plus 14 more at other Universities were granted to students working on GP-B. Several hundred undergraduates and 55 high-school students also participated, including astronaut Sally Ride and eventual Nobel Laureate Eric Cornell."

NASA funding for Gravity Probe B began in the fall of 1963. That means Everitt and some colleagues have been planning, promoting, building, operating, and analyzing data from the experiment for more than 47 years--truly, an epic effort. What's next?

Everitt recalls some advice given to him by his thesis advisor and Nobel Laureate Patrick M.S. Blackett: "If you can't think of what physics to do next, invent some new technology, and it will lead to new physics."

"Well," says Everitt, "we invented 13 new technologies for Gravity Probe B. Who knows where they will take us?" This epic might just be getting started, after all....

Author: Dr. Tony Phillips | Credit: Science@NASA



An artist's concept of twisted spacetime around a black hole. Credit: Joe Bergeron of Sky & Telescope magazine.

Milky Way Safari

by Dauna Coulter and Dr. Tony Phillips

Safari, anyone? Citizen scientists are invited to join a hunt through the galaxy. As a volunteer for Zooniverse's Milky Way Project, you'll track down exotic creatures like mysterious gas bubbles, twisted green knots of dust and gas, and the notorious "red fuzzies."

"The project began about four months ago," says astrophysicist Robert Simpson of Oxford University. "Already, more than 18,000 people are scouting the Milky Way for these quarry."

The volunteers have been scrutinizing infrared images of the Milky Way's inner regions gathered by NASA's Spitzer Space Telescope. Spitzer's high resolution in infrared helps it pierce the cloaking haze of interstellar gas and dust, revealing strange and beautiful structures invisible to conventional telescopes. The Milky Way Project is helping astronomers catalogue these intriguing features, map our galaxy, and plan future research.

"Participants use drawing tools to flag the objects," explains Simpson. "So far they've made over a million drawings and classified over 300,000 images."

Scientists are especially interested in bubble-like objects believed to represent areas of active star formation. "Every bubble signifies hundreds to thousands of young, hot stars. Our volunteers have circled almost 300,000 bubble candidates, and counting," he says.

Humans are better at this than computers. Computer searches turn up only the objects precisely defined in a program, missing the ones that don't fit a specified mold. A computer would, for example, overlook partial bubbles and those that are skewed into unusual shapes.

"People are more flexible. They tend to pick out patterns computers don't pick up and find things that just look interesting. They're less precise, but very complementary to computer searches, making it less likely we'll miss structures that deserve a closer look. And just the sheer numbers of eyes on the prize mean more comprehensive coverage."

Along the way the project scientists distill the volunteers' data to eliminate repetitive finds (such as different people spotting the same bubbles) and other distortions.

The project's main site (<http://www.milkywayproject.org>) includes links to a blog and a site called Milky Way Talk. Here "hunters" can post comments, chat about images they've found, tag the ones they consider especially intriguing, vote for their favorite images (see the winners at <http://talk.milkywayproject.org/collections/CMWS00002u>), and more.

Zooniverse invites public participation in science missions both to garner interest in science and to help scientists achieve their goals. More than 400,000 volunteers are involved in their projects at the moment. If you want to help with the Milky Way Project, visit the site, take the tutorial, and ... happy hunting!

You can get a preview some of the bubbles at Spitzer's own web site, <http://www.spitzer.caltech.edu/>. Kids will enjoy looking for bubbles in space pictures while playing the

Spitzer concentration game at <http://spaceplace.nasa.gov/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.

Volunteers study infrared images of our galaxy from the Spitzer Space Telescope, identifying interesting features using the special tools of the Milky Way Project, part of the Citizen Science Alliance Zooniverse web site.



How to Join the Delmarva Stargazers: Anyone with an interest in any aspect of astronomy is welcome

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Do you need the newsletter snail mailed to you (Y/N)? _____

Please attach a check for \$15 made payable to Delmarva Stargazers and mail to Kathy Sheldon, 20985 Fleatown Rd, Lincoln, DE 19960. Call club President Don Surles at 302-653-9445 for more information.