

Smoky Mountain Astronomical Society

S. C. R. A. P. S.

Society's Chronological Astronomical Papers

What matters today is not the difference between those who believe and those who do not, but the difference between those who care and those who do not.
Abbé Pire

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Big South Fork Proposal to be voted on in May

Our September 24-26 campout and star party at Big South Fork State Park is once again scheduled. Wonderful camping facilities and natural spectacles, plus lovely dark skies, await

Members will be asked to approve a proposal during the May meeting for underwriting the Big South Fork camping Star Party. Our price of reserving the camping area is \$150 for the weekend. (The area will accommodate far more people than SMAS will have.)

Because our last BSF campout turned out so well, Michael McCulloch took the initiative to make a reservation earlier this year, knowing that such reservations would be snapped up by the public quickly. He paid for the reservation with his own money, gambling that the members would happily support the effort.

The club would charge \$15 per family for a two night stay. Thus, it would only take 10 families to cover the entire cost. But suppose only 8 families signed up: who would make up the shortfall? That is precisely the question to be addressed by the motion to be made at the May meeting.

Lee Erickson will move that Michael McCulloch be reimbursed \$150 from the club treasury right away. If that passes, then the club will have paid for the entire reservation. In the event of subsequent cancellation, the club will get the refund.

Lee Erickson will also move that the officers will be authorized to decide how big a shortfall will be borne by the club, as the deadlines for cancelling are reached. If the shortfall becomes too big in the officers' judgment, the whole reservation could be cancelled.

How big is too big? That may be a subject of discussion when the motion is presented.

(Alternately, the members who participate might pay more individually to cover the shortfall, but that soon becomes a bookkeeping nightmare. Imagine trying to get say, 8 different people to cough up an extra \$3.75 each when half of them don't even come to the meetings.)

There is a small penalty for timely cancellation, \$10. (Well, it *was* a gamble, wasn't it?) You must cancel at least two weeks in advance (Sep 12) to get off for \$10. But if you get closer than two weeks, the penalty becomes \$75.

The September 12 deadline happens to be the date of the September club meeting at Pellissippi. To decide to cancel at that meeting means we have missed the \$10 deadline, because the reservations office closed at 5 pm. We've got to include some time for telephone delays and minimum staffing at the park. The reservations personnel are most accommodating, but they have a lot of extra duties.

Please sign up early (and prepay: \$15 for both nights, \$8 for one night), so we can know we have enough before the deadline. If you must cancel, please do it ASAP, recommend NLT Sep 10.

(Motions such as these are passed by a simple majority of members voting, requiring only a quorum. A quorum consists of at least 2 elected officers plus 7 other voting members.)

PSTCC Student star party By Michael McCulloch

SMAS members hosted a Student Star Party in the parking area of the Hardin Valley campus of PSTCC on the evening of April 10th. The SMAS members that attended included Erik Iverson and son Miles, Tim Hunt, Michael McCulloch, and Lee Erickson. Lee brought his ETX and the "Do Not Buy" scope, Tim setup his 12" Orion newt, and Michael brought a 9.25" SCT. The weather was not conducive to setting up Sasquatch as a brisk breeze was present most of the evening. Wind, Sasquatch, and a tall ladder are not a desirable mix -- especially for the public with no experience with such a large telescope.

As the evening progressed all of the scopes were initially trained on a nearly first quarter Moon. Shortly thereafter some couples arrived. It was unclear if they were associated with PSTCC or just visitors, but one couple had a young boy and girl of elementary age. Both were very interested in looking through the telescopes. At that point it became evident that a stepstool was needed for the children. I was able to produce a stepstool after a brief trip home (while Miles guarded his telescope), and that made serving up views much easier for the children at all the scopes as they were able to relax at the eyepiece and study what they observed.

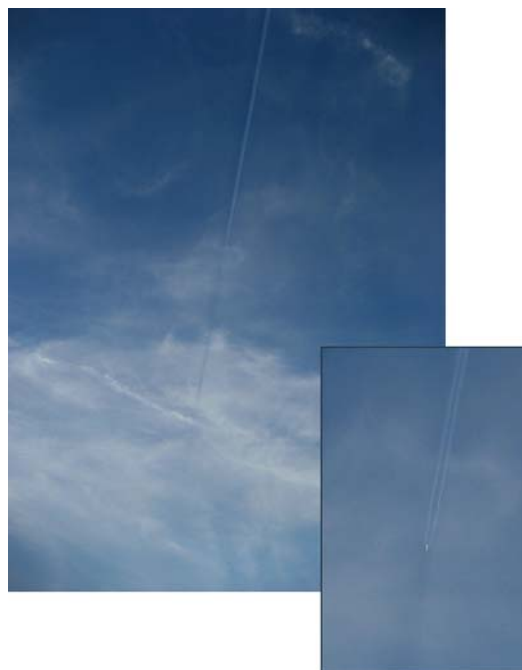
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PSTCC Student Star Party (cont'd)

Later, as it became darker, it was possible to find and point to Saturn as it hung high in the sky near Regulus in Leo. The seeing conditions were less than average but did support magnification up to about 200x without too much turbulence in the image, which allowed the public a nice view of the rings. Students from a microbiology class arrived and they all took turns with Saturn at the various telescopes. One female student, after being shown a large Cassini picture of Saturn, believed she clearly saw the Cassini division in the rings. The combination of seeing conditions and decreased inclination of the ring plane relative to us made observing the division more difficult than usual. One student asked why the rings of Saturn were going to "disappear", and I attempted to explain the periodic nature of the inclination of the rings and that it was not a disappearance per se.

The few PSTCC students and visitors that did attend were very courteous and appreciative of our efforts and several repeatedly thanked us before departing. The attendance was a little disappointing and was less than last year's similar event. Perhaps SMAS can find a way to better advertise future events to gain more attendance by students and the general public.

Although pictures of the telescopes and visitors were not obtained, there was an interesting sky event as SMAS members were setting up for the evening. A passenger jet flew almost due east away from the setting Sun and its contrail cast a shadow though which the jet traced in a nearly perfect line across two-thirds of the sky before making a turn. There was some debate as to whether the contrail shadow was above or below the jet. What do you think?



Minutes of April Meeting

By Lee Erickson

Meet and greet began shortly after 7:00 PM with a discussion of the previous evening's PSTCC Star Party, the weather warnings and then the conversation veered further into aviation and WWII naval history.

Vice President Michael McCulloch presided over the more formal meeting which began shortly after 7:30 PM. With very threatening weather in East Tennessee, there were only six persons in attendance

Tim Hunt brought highlights of his portfolio of Astrophotography and shared with us the good and some of the not so good results.

Tim's photos were taken with a variety of techniques, ranging from through the lens, Prime focus, Piggy Back, Barn door and with Tim's recently-acquired table top equatorial mount with motor drive. Some of Tim's photos were taken through the telescope of Nick Schepis. We found lots of interesting detail in Tim's photos. One wide angle photo included both M31 and M33. Another showed the Perseus Double Cluster and what we think is Kimble's Cascade

Michael McCulloch shared with us his beautiful photo of the Milky Way taken from Look Rock. That is the Lagoon nebula (M8) at the lower left.

Lee Erickson brought his box of wide angle, barn door astrophotos. Lee pointed out the light fall off from the center of the photo to the edges that is characteristic of how lenses gather light but which is so easily corrected out of digital images.



The meeting was adjourned at about 9:00 with the reminder of the April 12th Look Rock Star Party and the May 3rd Unicoi Crest star parties.

Green Bank Star Quest V

The "Quest" Continues !

Combining Optical and Radio Astronomy at One Event

Come join us July 2nd- 5th, 2008 under the dark skies of West Virginia for the 5th annual Green Bank Star Quest at the National Radio Astronomy Observatory in Green Bank, WV . By day checkout all the NRAO has to offer, like the new multi- million dollar Visitor's Center, and free tours of the facilities: including the 100 meter GBT – which is the world's largest fully steer able radio telescope. Star Quest will have 4 days of the best Astronomical Speakers in America, imaging classes, vendors, raffles, kids activities, and *Jimmy O'Dell Carol from the Rocket Boys of October Sky fame*, and nighttime optical observing on over six acres of camp sites at the low price of \$ 75.00 per person for the full four days (Children 18 and under are free with paying adult). For more information contact Joe Gonzalez at (304) 626-5012 or visit our web site at www.greenbankstarquest.org

Dear Reader,

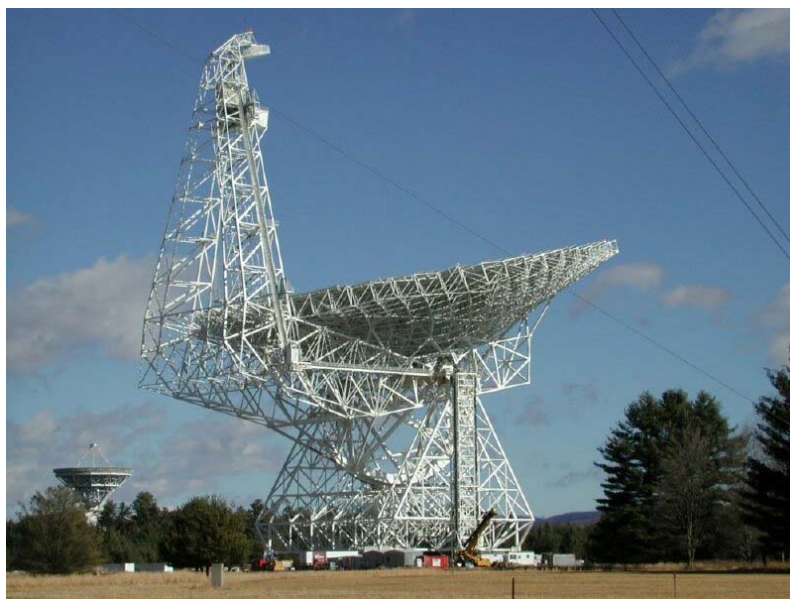
It's not too late to register we still have a limited number of registrations available. With our dynamite line up of speakers, well stocked vendors, and all the good press we have received lately, this event looks to be a **HOT ONE** so register now and secure your place in Green Bank history!

Please distribute this to any interested parties.

Thank you,

Deven Matlick

GBSQ Committee



Stellar Compass for Space Explorers

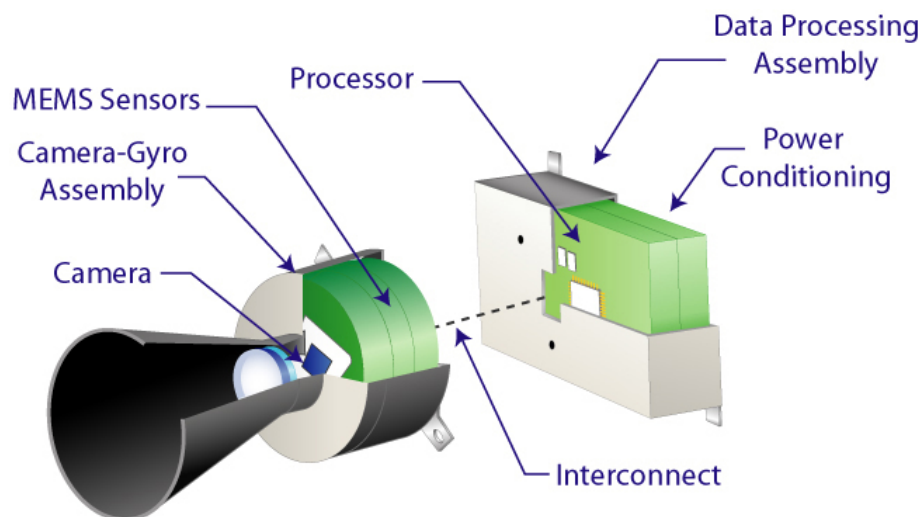
by Patrick L. Barry

In space, there's no up or down, north or south, east or west. So how can robotic spacecraft know which way they're facing when they fire their thrusters, or when they try to beam scientific data back to Earth?

Without the familiar compass points of Earth's magnetic poles, spacecraft use stars and gyros to know their orientation. Thanks to a recently completed test flight, future spacecraft will be able to do so using only an ultra-low-power camera and three silicon wafers as small as your pinky fingernail.

"The wafers are actually very tiny gyros," explains Artur Chmielewski, project manager at JPL for Space Technology 6 (ST6), a part of NASA's New Millennium Program.

Traditional gyros use spinning wheels to detect changes in pitch, yaw, and roll—the three axes of rotation. For ST6's Inertial Stellar Compass, the three gyros instead consist of silicon wafers that resemble microchips. Rotating the wafers distorts microscopic structures on the surfaces of these wafers in a way that generates electric signals. The compass uses these signals—along with images of star positions taken by the camera—to measure rotation.



Compass is built as two separate assemblies, the camera-gyro assembly and the data processor assembly, connected by a wiring harness. The technology uses an active pixel sensor in a wide-field-of-view miniature star camera and micro-electromechanical system (MEMS) gyros. Together, they provide extremely accurate information for navigation and control.

Because the Inertial Stellar Compass (ISC) is based on this new, radically different technology, NASA needed to flight-test it before using it in important missions. That test flight reached completion in December 2007 after about a year in orbit aboard the Air Force's Tac-Sat-2 satellite.

"It just performed beautifully," Chmielewski says. "The data checked out really well." The engineers had hoped that ISC would measure the spacecraft's rotation with an accuracy of 0.1 degrees. In the flight tests, ISC surpassed this goal, measuring rotation to within about 0.05 degrees.

That success paves the way for using ISC to reduce the cost of future science missions. When launching probes into space, weight equals money. "If you're paying a million dollars per kilogram to send your spacecraft to Mars, you care a lot about weight," Chmielewski says. At less than 3 kilograms, ISC weighs about one-fifth as much as traditional stellar compasses. It also uses about one-tenth as much power, so a spacecraft would be able to use smaller, lighter solar panels.

Engineers at Draper Laboratory, the Cambridge, Massachusetts, company that built the ISC, are already at work on a next-generation design that will improve the compass's accuracy ten-fold, Chmielewski says. So ISC and its successors could soon help costs—and spacecraft—stay on target.

Find out more about the ISC at nmp.nasa.gov/st6. Kids can do a fun project and get an introduction to navigating by the stars at spaceplace.nasa.gov/en/kids/st6starfinder/st6starfinder.shtml.

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

Late breaking news...

SMAS will perform another public outreach Star Party at the Townsend Visitor's Center on May 10. All members are invited to bring their telescopes and binoculars.

Details such as parking, observing site, facilities, etc., are not yet available, but will be posted on our website as they become known.

May 2008

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3 Star Party Unicoi Crest
					UTK	TAO
4	5 New moon	6	7	8	9 Meeting PSTCC 7 pm BSF VOTE!	10 Star Party Townsend Visitor Center
11	12	13	14	15	16	17
					UTK	TAO
18	19	20	21	22	23	24
25	26 SCRAPS depends Upon its friends	27 Help! Help!	28	29	30	31 Star Party Blue Unicoi Crest