Astronomy Club of Tulsa

OBSERVER

December 2006

http://www.AstroTulsa.com

ACT, Inc. has been meeting continuously since 1937 and was incorporated in 1986. It is a nonprofit; tax deductible organization dedicated to promoting, to the public, the art of viewing and the scientific aspect of astronomy.

What

The Astronomy Club of Tulsa Star Party

When

8 December 2006

Where

Room M1 inside Keplinger Hall, the Science & Engineering Building at TU. Enter the parking lot on the East Side of Keplinger Hall from Harvard and 5th Street. This will take you directly toward the staircase to enter the building. Room M1 is the first room on the left.

President's Message

Jerry Mullennix

Hold on, you say. Why is Jerry writing the president's message? There has been a change and we will get to all that in a moment, keep reading. First I would like to cover a little club business.

As we wrap this year up, I would like to extend a merry Christmas and a happy New Year to all of you from all of the ACT board & staff members. As this year rolls out and a new one comes in our club turns 70 years old and I think Steve Chapman is the only one who can remember when it was formed. (At least he talks like he can.) At 70 years of age the club has never been in a better position to extend the knowledge of astronomy in the Tulsa community than it is right now. Look for big things and great skies as we march into our 70th year.

I know its Christmas time and everyone's schedule is packed with family and season activities but I would like to ask that you come and join us at our general meeting at TU on Friday, December 8th, at 7:30 PM. Room M1 at Keplinger Hall, 5th and Harvard for a very special guest speaker. "This is truly a "don't miss opportunity." Please feel free to invite anyone you think might enjoy it, our meetings are family oriented, educational, and just down right fun - not to mention it's FREE.

Professor Yun Wang has gracefully agreed to give a talk at our December club meeting; she is with the Department of Physics and Astronomy at the University of Oklahoma. The title of her talk will be The Dark Side of the Universe. Ms. Wangs current research interests include probing dark energy with cosmological data, supernovae and cosmology, cosmic microwave background anisotropy, observational constraint on inflationary models, gravitational lensing & cosmology, and the measurement of cosmological parameters.

Professor Wang did the feasibility study of a deep supernova survey on a dedicated telescope in 1998; the number of supernovae expected from such a survey surprised and encouraged many observers. In 2001, she studied the relative merits of a very deep survey of supernovae as compared to shallower wide-field surveys in placing constraints on dark energy. Based on this, she developed a mission concept for the NASA-DOE Joint Dark Energy Mission (JDEM), Joint Efficient Dark-energy Investigation (JEDI), in collaboration with Arlin Crotts (Columbia) and Peter Garnavich (Notre Dame).

In a series of papers starting in 2001, she has shown the value in analyzing the dark energy density instead of (or in addition to) its equation of state. This is because the dark energy density is more closely related to observables (hence better constrained), and can also probe a greater range of dark energy models than the dark energy equation of state. She also demonstrated the importance of making model-independent parametrizations of dark energy, and improving the robustness of the analysis by imposing priors from complementary observational data (such as cosmic microwave background and galaxy clustering) in a consistent manner (2001-2004). she also worked on using weak lensing (2003), Lyman-alpha forest (2003), and galaxy clustering (2004) as complementary probes of dark energy. Wang & Tegmark (2004) gives the most up to date and accurate dark energy constraints from data. Wang & Tegmark (2005) presents a new robust data analysis technique and shows the potential of JEDI in measuring dark energy density.

She has shown how the weak lensing effect of supernovae can be analytically modeled by a universal probability density function derived from the matter power spectrum (2002). She set up a framework for removing or minimizing the effect of weak lensing of supernovae on cosmological constraints by flux-averaging. Most recently, she has shown that weak lensing effects may have already begun to set in and must be dealt with in deriving robust constraints on dark energy (2005). deriving robust constraints on dark energy (2005).

JEDI is the natural extrapolation to a space platform of the concept of an ultra-deep supernova survey proposed by her in 1998 (astro-ph/9806185). She is the leader of this candidate implementation of the NASA-DOE Joint Dark Energy Mission (JDEM), which is superior in science and efficiency. JEDI uses three independent methods to probe dark energy: (i) standard candles: supernovae as cosmological standard candles at different distances; (ii) standard ruler: baryon oscillations as a cosmological standard ruler at different cosmic epochs; (iii) gravitational lensing: weak lensing distortion of the images of background galaxies at different distances by foreground galaxies. This will allow us to triangulate dark energy properties and avoid systematic biases. JEDI can measure the cosmic expansion history H(z) to 2% accuracy and the cosmic large scale structure growth factor G(z) to 5% accuracy in redshift bins of dz=0.2. For a dark energy equation of state w(z)=w_0+w'z, JEDI can measure w_0 to 2% accuracy and w' to 5% accuracy.

Professor Wang has too many selected publications to be mentioned here. If you would like to get a little primmer into Dark Energy prior to the meeting I suggest a short reading at http://www.nhn.ou.edu/~wang/measuring_dark_energy_2-Sep-05.pdf. It is just two pages and will get you rolling with questions. Again, I strongly urge you not to miss this one. Lets all turn out and offer a warm welcome to Professor Wang.

Ok lets clear up this president thing! Due to personal reasons Tim Davis has resigned as president of ACT. Tamara Green our Vice-President will now move up and assume the duties of president. While Tamara has not been in the Vice-Presidents position long, she has served on the board for over a year and is aware of every issue facing the club at the present time. She also has the full support of all the officers and board members. That being said I would like to invite all of you to cheer Tamara on; it's my feeling she will do a great job and be remembered as terrific asset.

In the last several years or so in which Tim Davis has served as our President and Vice-President we have accomplished several of our clubs objectives and have had great board cooperation in planning the future of astronomy in the Tulsa area. Tim has been a terrific observing buddy, going out with me in weather that common sense dictates otherwise. Tim has contributed more time and effort than anyone in the last couple of years to club visitors and groups. For that we will always be grateful. Tim, we all look forward to the time you rejoin us, we will miss you.

Now that we have covered all of that, let's get back to astronomy. After all that's what we are about. I know many folks are part time observers and some only come out when the weather is picture perfect. No criticism here, any time you can view the night sky or join us for observation it's a good time and everyone is

always welcome. However, if you have never braved a cold winter night to enjoy the spectacles that can only be seen this time of year then you have missed some of the most magnificent objects astronomy has to offer. To explain this further, as the Earth travels around the Sun in its orbit, the north-south position of the Sun changes over the course of the year due to the changing orientation of the Earth's tilted rotation axes with respect to the Sun. We are tilted a little more than 23 degrees.

In the northern hemisphere, the Winter solstice is the day of the year (near December 22) when the Sun is farthest south. However, in the southern hemisphere, winter and summer solstices are exchanged so that the winter solstice is the day on which the Sun is farthest north. The winter solstice marks the first day of the season of winter. The declination of the Sun on the (northern) winter solstice is known as the tropic of Capricorn (-23 27').

To put this in astronomy terms, it means we get the longest nights in the winter. December offers many objects that look their very best, these being; Andromeda, The Double Cluster, The Blue Snowball, Orion and the Pleiades. The list is huge and it runs all night and all winter long. Saturn (Leo) is back in all of its glory and we understand more about how this planet works than we ever have, thanks to the Cassini Mission. By the end of December Mercury, Jupiter and Mars will precede the Sun in the early morning hours.

For Asteroids - Vesta, Iris, Ceres (now a dwarf planet/ asteroid or whatever the yuppie term is now), Massalia, Melpomene, and Hebe are all brighter than Mag 9. Comets don't offer much in December but if you are setup at sundown the end of the month than you might be able to catch McNaught (C/2006 P1) at Mag 7 just above the horizon in the West. Comets are always surprising and who knows when the next new one will come around. One more thing about Ceres, there is research now that suggest it is hiding a huge amount of water ice beneath its surface.

On a sad note, NASA is losing hope of ever contacting the Mars Global Surveyor, while still trying it does not look good. Even if found, Mars Global Surveyor has likely finished its operating career. The spacecraft has served the longest and been the most productive of any mission ever sent to the red planet. Many of you have received updated emails from me with great links to fantastic photography provided by MGS and Cassini and I will really miss my weekly updates from NASA on this terrific mission. On a brighter note, Mars Reconnaissance Orbiter has completed its areobraking and is already sending the most detailed pictures from the red planet. In one image from MRO, of the rover Spirit, you see the tracks in the sand behind it, JUST FANTASTIC. If you would like periodic updates on the Cassini Mission or other relevant NASA missions please drop me an email at jerrym@pantherenergy.us and I will add you to the list.

Again, Merry Christmas and I look forward to seeing all of you at our meeting and our winter star parties.

Lands Tidbits

By John Land

A big Thank You goes out to Richard Alford and others for fixing observatory dome. It had slipped sideways on the its tracking plate and was causing all sorts of problems trying to move the dome.

Triple Planet Conjunction Dec 1 - Dec 14
The first two weeks of December will feature a triple conjunction on planets in the morning sky. Mercury, Mars and Jupiter will all fit within the field of view of binoculars. On the Weekend of Dec 9 through Monday Dec 11 they will all be within a one degree circle. You'll need to be out by 6:30 AM and look very low on the ESE horizon only 5 degrees up at azimuth 120. (About 3 fist widths to the right off EAST) For a fun presentation of the planet conjunction listen to Jack Horkheimer's Stargazer at http://www.jackstargazer.com/

Magazine subscriptions Renewals: Several of you may be receiving renewal notices for you Astronomy or Sky & Telescope. If you renew through the club you get a substantial discount. Go to the website and fill out the renewal form then print it off and mail it in with your notice and envelope from the magazine. Or you may fill out and mail in the form below.

More Lands Tidbits

By John Land

Welcome Recent New Members: Several web guests but no new members

DON'T LET YOUR MEMBERSHIP or Subscriptions LAPSE !! Check your MAILING LABEL for membership expiration date. Those receiving Email should get a reminder when your membership is up for renewal or you may contact John Land. You may also renew magazine subscriptions through the club for substantial discounts.

GUEST SIGN IN SECTION on the Website is already bringing the club new contacts for potential new members.

Changing EMAIL - When you change your email or mailing address be sure to send me the new information so I can update the club records. You can use the Join feature on the club web page to make changes.

ON LINE Club Memberships and Renewals:
Adults - $ 35 per year includes Astronomical League Membership
Students $ 15 without League membership.
Students $ 20 with League membership.

- Student shall be defined as a person 25 or younger actively taking courses at a college or trade school or persons still in High school or below.
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* Adult Students over 25 may join at the student rate for one year if enrolled in an Astronomy course in an area college.

We now have an automated on line registration form on the website for new AND renewal memberships plus magazine subscriptions. You simply type in your information and hit send to submit the information. http://www.astrotulsa.com/Club/join.asp You can then print a copy of the form and mail in your check.

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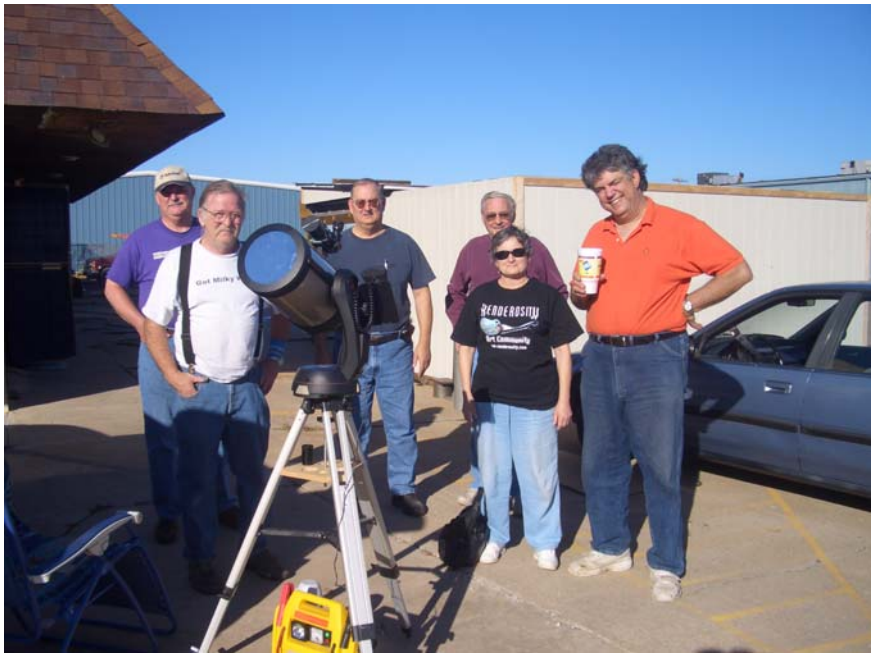
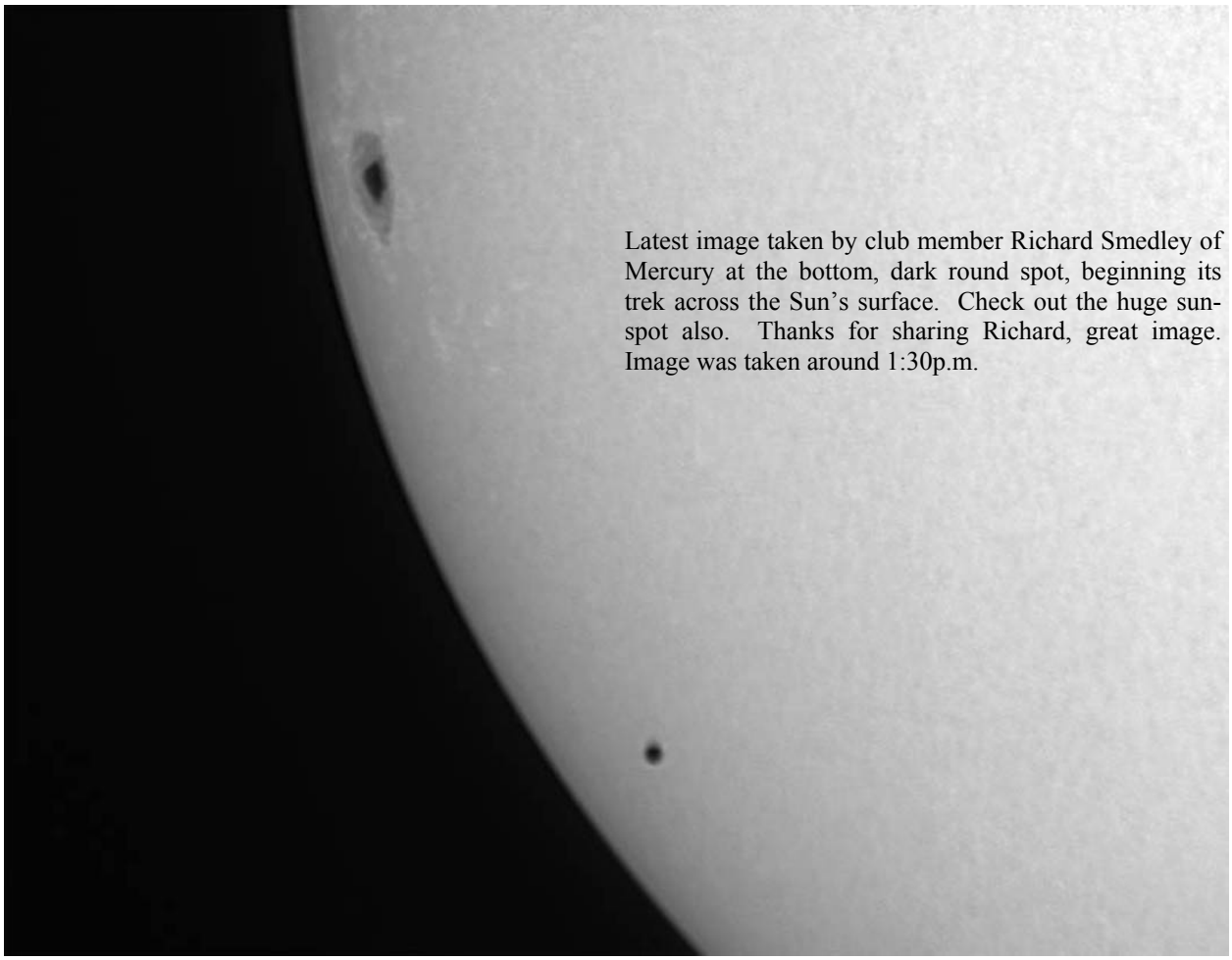
Magazine Subscriptions: If your magazines are coming up for renewal, try to save the mailing label or renewal form you get in the mail. Do NOT mail renewals back to the magazine! To get the club discount you must go through the club group rate.

Astronomy is $ 34 for 1 year or $ 60 for 2 years. www.astronomy.com
Sky & Telescope is $33 / yr www.skyandtelescope.com Sky and Telescope also offers a 10% discount on their products.
NIGHT SKY is $18 / yr A exciting new bi-monthly magazine for beginning or casual astronomers. http://nightskymag.com/

Address Corrections- Email changes - Questions: You may forward questions to the club call our message line at 918-688-MARS (6277) Or go to the club website and Fill out an online form or just click on John Land and send an email. Please leave a clear subject line and message with your name, phone number, your question - along with address or email



The following members are gathered around Denny Mishler's Nexstar 8 to observe Mercury's Transit of the Sun at Sheldon Padawer's Star Corral Store/Observatory in Broken Arrow on November 8th. From left, Bill Steen, Don Sanders, John Popechan, Paula Sanders, Robert Wiebusch and Sheldon. Also visiting were Richard Alford, Chuck Bigbie and David Stine. A beautifully silhouetted Mercury was accompanied by a giant 3 dimensional sun spot that was enjoyed by all.



Latest image taken by club member Richard Smedley of Mercury at the bottom, dark round spot, beginning its trek across the Sun's surface. Check out the huge sunspot also. Thanks for sharing Richard, great image. Image was taken around 1:30p.m.

Astronomy Club of Tulsa membership ($35/year) includes membership in the Astronomical League and subscription to ACT's "Observer" and AL's "Reflector". "Astronomy" ($34/year) and "Sky and Telescope" ($33/year) are also available through the club. For more information contact John Land at 918.357.1759.

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