

The Objective View

Newsletter of the Northern Colorado Astronomical Society

October 2009

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Next Meeting: October 1 7:30 pm

Your Eyes On the Sky: NEOS, Satellites and More, by Suzanne Metlay, Ph.D.

Operations Director

www.SecureWorldFoundation.org

Club Business at 7:15 pm

**Fort Collins Museum, 200 Mathews St
Fort Collins**

<http://www.fcgov.com/museum/>

Club Brochure: http://www.ncastro.org/Contrib/2009_Brochure.pdf

NCAS Programs

Nov 5 TBA

Dec 3 Dr Jack Harvey Remote Imaging on Two Hemispheres

NCAS Public Starwatch at Fossil Creek Reservoir

Oct 23 6:30 to 10 pm

Nov 27 6:30 to 10 pm

http://www.co.larimer.co.us/naturalresources/fossil_creek.htm

City of Fort Collins Natural Area Program at Sunset

Bobcat Ridge: Oct 22

Dark Site Observing Dates

Oct 16, 17 Keota or RAC site, ask FRAC

Other Events

Little Thompson Observatory, Berthoud 7 pm Oct 16
Time and Calendars by Dr. Irene Little

<http://www.starkids.org>

CSU Madison Macdonald Observatory Public Nights
On East Drive, north of Pitkin Street
Tuesdays after dusk if clear, when class is in session

Cheyenne Astronomical Society 7 pm Oct 16

<http://home.bresnan.net/~curranm/>

Chamberlin Observatory Open House, 7 to 10 pm
Oct 21, Nov 21 303 871 5172

<http://www.du.edu/~rstencil/Chamberlin/>

Longmont Astronomical Society 7 pm Oct 15 TBA

<http://www.longmontastro.org/>

September 3 Program: LASP Missions: A Tour of the Solar System and Beyond, by Dr. Bill Posse

The work of LASP dates to 1954. It is the only space institution to date which has operated a mission to every planet. Funding comes mostly from NASA, plus some NSF support. There is a unique synergy between scientists and engineers there. There are 400 staff members and 120 students. The policy of training undergraduates has allowed students to participate in cutting edge projects, and their motivation to work long hours has translated into efficiency and cost savings. A 10 week summer program qualifies them to apply to operate spacecraft. A 20 hour per week commitment is necessary during the school year. They are warned that night and weekend work will be needed, because space is dynamic. Students are hired for engineering, data analysis and software design. Bill discussed several missions in detail. The SORCE craft monitors the total irradiance from the Sun. It measures from X-ray to short IR. There is hope to resolve the wide ranging predictions for the solar cycle. This is relevant to the Earth's warming climate. MESSENGER launched in August 2004 and its 3rd flyby of Mercury occurred in September 2009. It detected a diffuse atmosphere tailing from the planet. It imaged portions of the surface for the first time. The prolonged mission was required to match the speed of Mercury. It flew by Venus twice and by Mercury 3 times and will settle into orbit. Venus was visited by Mariner V in 1967. The Pioneer Venus Orbiter flew in 1978 and a LASP instrument found evidence of active volcanoes. Earth missions included QUICKSCAT. It has a microwave scatterometer which reports wind speed over the oceans. NOAA relies on it 24 hours a day, and it passes ground stations 15 times a day. It was launched on a Titan II recovered from the rocket boneyard in the Arizona desert. Its data aid a surprising variety of users including yacht racers in the Indian Ocean and surfers. Its role will fall to aircraft when

it fails. ICESAT was launched in 2003. It monitors changes in global ice sheets, cloud and aerosol heights. It detects land topography and vegetation characteristics. It is a Ball Aerospace craft. The AIMS mission studies noctilucent clouds. Its transceiver is failing, so communication has to be as efficient as possible. Everything was turned on in 2 orbits which is exceptional. It is the only craft mostly running autonomously. Mars was visited by Mariners 6 and 7. Mariner 9 was the first craft to orbit another planet. It was built by LASP to study the atmosphere. Voyager 1 and 2 were launched to the Gas Giants. LASP built the photopolarimeter used to determine the composition of the moons of Jupiter and Saturn. They are still transmitting and it takes about 30 hours for the signal to reach Earth. Larry Esposito is now active in teaching and with the Cassini mission to Saturn. It was launched on a Titan IV by the Air Force. Besides stunning images, there has been a continuing stream of discoveries. Star occultations by the rings show transient aligned clumps of ring particles that may grow into new moons. Enceladus is home to liquid water geysers driven by tidal forces. It may be an easier target than Europa when considering an astrobiology mission. Voyagers studied Uranus and Neptune. The New Horizons craft is bound for Pluto and arrives in 2014. It has a student-built instrument, the dust counter. It is logging about 3 hits a day. Beyond the Solar System, Bill reviewed the exciting news about Kepler. It was built by Ball Aerospace on a short timeline. It has a 1.4 meter primary and a 96 million pixel detector. It is the largest Schmidt camera in space. Its wide field is monitoring 147,000 stars in a 10 by 10 degree field. Its task is like detecting the change in light from a 100 watt light bulb as a pinhead passes in front of it. It is looking for planets in the habitable zone of stars. It takes data every 30 minutes, stores and then downloads to Earth every month. It communicates via NASA's Deep Space Network, and they can check up on its health via wireless from the grocery line. It is in a heliocentric Earth-trailing orbit. A test on Exoplanet HAT-P-7b was precise enough to detect the planet's reflected light in the curve, a phase-dependent change of less than 1/10,000 in the output of the system. Matt, a Colorado student is flight controller. Expect 3 years for most Kepler results, to allow confirmation. In LASP's future is MAVEN, Mars Atmosphere and Volatile Evolution. It will measure the current escape of Mars atmosphere, and allow projection of its history. Bill summarized that the lab has a long track record of successful missions. Its model of students mentored by professionals is a win-win scenario for all. He then shared educational material and journal articles for the Kepler mission. For further information:

September 3 Club Business

President Bob Michael called the meeting to order. Event dates were announced. Treasurer John Caldwell reported on the club account. Next outreach events are at Bobcat Ridge, Pingree Park EcoWeek for the Liberty Common School, and St. Elizabeth Ann Seton School in Fort Collins. Tom Teters is coordinating a site visit at LASP guided by Dave Street. Mt. Wilson Observatory, topic of our last meeting, is in peril due to a wildfire.

From Andrea Schweitzer: Galilean Nights: Global Astronomy Event Invites the World to Discover Our Universe

17 September 2009, Paris: Wind the clock back 400 years and follow in the footsteps of a giant – experience now just what first amazed Galileo in 1609! The latest Cornerstone project of the International Year of Astronomy 2009 (IYA2009), Galilean Nights, will see thousands of public observing events around the world replicating Galileo's observations and bringing what he saw 400 years ago to the public of today. From 22 to 24 October, amateur and professional astronomers, science centres, schools and all interested groups are invited to be part of the Galilean Nights project and to register their events on the project website www.galileannights.org. We can all make this a worldwide success.

www.iau.org/public_press/news/release/iau0918/

Hubble's Amazing Rescue premieres Tuesday, October 13, 2009 at 8PM ET/PT on PBS

For more information, visit www.pbs.org/nova/hubble

Okie-Tex Star Party 2009 Report, from Rob Grover

Having fun at Camp Billy Joe, but until last night, the skies have not cooperated. However, two miracles occurred yesterday. I managed to be the lucky winner of the Grand Prize at the first Giveaway night. I am the lucky, proud owner of a 22mm TeleVue Type 4 Nagler eyepiece. That 82 degree FOV is a real eye opener. Almost like looking through a telescope for the first time! I never win anything, and was quite surprised to have such good fortune this time. The second miracle was that after receiving such a great gift, the skies defied the predictions - and typical new astro-toy curse - and we were blessed with a most wonderful, steady, clear night. The transparency was down a bit and things were not as dark as they were in Fox Park last month, but it was still a beautiful night.

The Veil Nebula showed lots of detail and was a much easier target than it normally is for me. I then made the rounds of some of the more familiar sights like M13, M8, M20, M16, M17, M6, M11, M33 & M31 (plus M32 & M110 in the same field). A neighbor had a Big Barlow and offered it to me for a while. I returned to M13, then viewed M57 & M27 as well. Knowing I'd destroy my night adaptation for a while, I couldn't resist observing Jupiter through that setup. Good choice. I saw a small speck on Jupiter and at first thought it was something on the optics. As I watched, I realized it was moving and I was witnessing my first view of a moon transit across the planet. Cool.

I decided to give my eye a chance to recover, boxed up my prize and headed out into the dark to find my cousin & his 17.5 inch dob. After finally locating him, his friends decided we needed to run an eyepiece evaluation. We were trying various Naglers, Panoptics, and even a couple Ethos. The

Sculptor Galaxy was beautiful. The Veil blew me away and the details in M31 simply popped. We even saw the haze around Merope in the Pleiades. Looks like I'll be starting my dob project sooner than I anticipated. Around 3am, the dew really set in. Didn't really cause any problems other than on the Telrad - which I was learning to use with the kind assistance of my cousin. I learned the rudiments of star hopping and actually found M27 on my own!

By this time, Orion was up nearly out of the low level muck and we spent time gazing at M42. again, a major WOW moment. At that point, the dew was getting pretty heavy and someone mentioned something about an adult beverage so we put the scopes to bed and enjoyed a couple hours of fascinating conversation around the glow of a half dozen red LED lights on the ground - including two flashing ones. Not a bad virtual campfire.

My cousin, Dennis Webb, gave a delightful presentation (I might be slightly biased) on observing Arp's Peculiar Galaxies and discussed his book "The Arp Atlas of Peculiar Galaxies - A Chronicle & observing Guide". Dennis was responsible for amassing and organizing the observing guide while co-author Jeff Kanipe handled the chronicle & biographical section. It is both an enjoyable read and a well organized observing tool.

Dennis donated a book to the Giveaway and the Karma was returned to him as well. He also won an eyepiece - a TMB Planetary 6mm. Not a bad haul for my extended family!

If tonight is as good as last night, I'll see if I can get some imaging time in. There are some targets in the Southern sky I want to capture before they are gone for the year. Kind of cloudy now, but it was like this yesterday as well.

Fellow NCAS member David Auter has joined me for this trip

and we have been enjoying ourselves immensely. The poor skies have made for a wonderful chance to meet new astronomy friends, check out different equipment and generally immersing ourselves in all things astronomical.

From Tom Teters: Hundreds of Mars Reconnaissance Orbiter Images Released

http://hirise.lpl.arizona.edu/releases/sept_09.php

KKkkkkkeeeewwwwwlllllllll !!!!!

The Very Long Mystery of Epsilon Aurigae, by Robert Stencel

See Sky and Telescope, May 2009

<http://mysite.du.edu/~rstencel/epsaur.htm>

Don't Miss the LCROSS Mission, See Below

Best Looks

- Moon By Mars Oct 11, 12; by Venus and Saturn Oct 16
By Jupiter Oct 26
- Mercury First 3 weeks at dawn. By Saturn Oct 8
- Venus In E predawn. By Saturn Oct 13
- Mars In SE predawn. By M44 Oct 30 to Nov 2
- Jupiter In S in evening
- Saturn In ESE at dawn
- Uranus In SSE in Pisces
- Neptune By Jupiter all month in Capricornus



Greg, Pavel, Dan and Tim at Fossil Creek Reservoir, Sep 2009



Randy and O. Moench with Tim



Tom and Rob at Fossil Creek Reservoir, Sep 2009



Jon Caldwell and his homebuilt scope

International Space Station Passes for Loveland – Fort Collins

October 2009

Date	Mag	Starts			Max. altitude			Ends		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
10 Oct	-1.4	06:49:47	10	SSW	06:52:25	32	SE	06:55:03	10	ENE
11 Oct	0.2	05:41:17	10	SE	05:41:33	10	SE	05:41:49	10	SE
12 Oct	-1.7	06:02:33	10	SSW	06:05:12	32	SE	06:07:52	10	ENE
13 Oct	0.0	04:54:37	10	ESE	04:54:37	10	ESE	04:54:49	10	ESE
13 Oct	-3.4	06:26:10	10	WSW	06:29:03	68	NW	06:31:58	10	NE
14 Oct	-1.6	05:18:16	32	ESE	05:18:16	32	ESE	05:20:34	10	ENE
15 Oct	-3.4	05:41:44	66	NNW	05:41:44	66	NNW	05:44:36	10	NE
16 Oct	-1.9	06:05:03	23	NW	06:05:42	25	NNW	06:08:11	10	NNE
17 Oct	0.0	04:56:47	13	NE	04:56:47	13	NE	04:57:08	10	NE
17 Oct	-1.0	06:28:13	10	NW	06:29:52	14	NNW	06:31:32	10	NNE
18 Oct	-0.7	05:19:52	15	NNE	05:19:52	15	NNE	05:20:40	10	NNE
18 Oct	-0.6	06:53:38	10	NNW	06:54:09	10	N	06:54:39	10	N
19 Oct	-0.8	05:42:52	13	N	05:42:52	13	N	05:43:59	10	NNE
10 Oct	-1.4	06:49:47	10	SSW	06:52:25	32	SE	06:55:03	10	ENE
11 Oct	0.2	05:41:17	10	SE	05:41:33	10	SE	05:41:49	10	SE
12 Oct	-1.7	06:02:33	10	SSW	06:05:12	32	SE	06:07:52	10	ENE
13 Oct	0.0	04:54:37	10	ESE	04:54:37	10	ESE	04:54:49	10	ESE
13 Oct	-3.4	06:26:10	10	WSW	06:29:03	68	NW	06:31:58	10	NE
14 Oct	-1.6	05:18:16	32	ESE	05:18:16	32	ESE	05:20:34	10	ENE
15 Oct	-3.4	05:41:44	66	NNW	05:41:44	66	NNW	05:44:36	10	NE
16 Oct	-1.9	06:05:03	23	NW	06:05:42	25	NNW	06:08:11	10	NNE
17 Oct	0.0	04:56:47	13	NE	04:56:47	13	NE	04:57:08	10	NE
17 Oct	-1.0	06:28:13	10	NW	06:29:52	14	NNW	06:31:32	10	NNE
30 Oct	-0.7	05:20:30	21	E	05:20:30	21	E	05:21:42	10	ESE
30 Oct	-1.2	06:52:06	10	W	06:53:44	14	SW	06:55:21	10	SSW
31 Oct	-1.5	05:43:40	25	SSE	05:43:40	25	SSE	05:45:06	10	SE

ISS predictions from:

<http://www.heavens-above.com/main.aspx?lat=40.4997&lng=-105.05736&loc=Fort+Collins+CO+USA&alt=0&tz=MST>

October 9 0530 MDT : Kicking Up Dust on Cabeus A: the LCROSS Mission, from Vern Raben

On Friday morning October 9th at approximately 5:30 am MDT (11:30 UT) the Lunar Crater Observation and Sensing Satellite (LCROSS) will crash into the western wall of lunar crater "Cabeus A" which is near the Moon's south pole. The satellite will be following an Atlas Centaur V upper stage rocket and fly into the plume of dust created from the impact of the rocket. LCROSS will measure properties of the dust plume to determine if any water ice was on the floor of the crater. It will then impact the lunar surface.

I watched the LCROSS impact crater selection briefing this morning on the NASA channel and note there are some changes in the brightness projections. The project scientist and principal investigator, Tony Calaprete, said that the plume from the impact should be brightest somewhere between 10 to 60 seconds after impact. It is anticipated to be magnitude +5 in brightness and maybe as bright as magnitude +4. The plume should last for about 90 seconds.

This makes the prospects for observing or imaging the impact better. The +5 magnitude is easily in range of a webcam on 10 inch or larger scopes at 15 fps. For example, Jupiter's brightest 4 moons are in the magnitude +5 range and 1 to 1.75 arc across. They can be easily seen on a webcam if you crank up the brightness slightly or drop the exposure to 1/20 sec. It appears the hard part will be getting up at 5 am...

(Crater "Cabeus A" shown below is around 20 arc sec across). See <http://lcross.arc.nasa.gov/observation/amateur.htm>

