

The Objective View

Newsletter of the Northern Colorado Astronomical Society

December 2010

Robert Michael, President

pres@ 970 482 3615

Dan Laszlo, VP and Newsletter Editor

objview@ Office 970 498 9226

Chad Moore, Secretary

sec@

Jon Caldwell, Treasurer

treas@

Greg Halac, Web Editor and Outreach Coordinator

web-edit@ 970 223 7210

Dave Chamness, AL Correspondent 970 482 1794

add ncastro.org to complete email address

Next Meeting: December 2 7:30 pm

Escape from Plato's Cave: The Milky Way Galactic Coordinate System

By Bill Tschumy

Think Astronomy

www.thinkastronomy.com

Club Business with Nominations at 7:15 pm

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

http://nightsky.jpl.nasa.gov/club-view-directions.cfm?Adress_ID=2810

NCAS Programs

Jan 6 Tom Fay Sky Surveys and Web Portals

Feb 3 TBA

NCAS Public Starwatch at Fossil Creek Reservoir

Dec 10 6:30 pm

Dec 20-21 TBA

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

City of Fort Collins Natural Area Program at Sunset

Bobcat Ridge: Dec 28

<http://www.fcgov.com/naturalareas/finder/bobcat>

Dark Site Observing Dates

December 3, 4 Keota, or other dark site, ask FRAC

Other Events

Chamberlin Observatory Open House, 7 to 10 pm

Dec 11 Jan 8 Feb 12 Mar 12 Apr 9 May 14

303 871 5172 <http://www.du.edu/~rstencil/Chamberlin/>

Cheyenne Astronomical Society 7 pm Dec 17 Elections and party, please RSVP. Cheyenne Botanical Gardens

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

CSU Madison Macdonald Observatory Public Nights

On East Drive, north of Pitkin Street

Tuesdays after dusk if clear, when class is in session

Estes Park Memorial Observatory. Dec TBA

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

Little Thompson Observatory, Berthoud 7 pm Dec 17

Dr John Ristvey, Comet Mysteries Revealed

<http://www.starkids.org>

Longmont Astronomical Society 7 pm Dec 16 at IHOP, 2040

Ken Pratt Blvd. Robert Arn, Imaging the Universe on a

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

November 4 Program: Astrophotography, by Robert Arn, CSU Department of Mathematics

From Jon Caldwell

Discussion started with what the bare minimum equipment is required for astrophotography, and in this case "nightscape" photography as well. Nightscape photos include foreground objects as well as sky and astronomical objects. A point-and-shoot or used DSLR digital camera and tripod are all that is required for some really stunning photos, including scenery taken at 1:00 am. Moonlight provides all the light needed for color pictures, using time exposures. Short exposures can capture the constellations, and adding "light painting" on foreground objects can highlight trees or other interesting features. Even deep space objects can be photographed by taking many short exposures (to reduce star trailing) and stacking them to increase and capture fainter objects. The initial investment for such work can be under \$300.

Adding a simple table top equatorial mount and drive for <\$100 can allow even more deep space objects to be captured, and a single 200 mm telephoto lens will give photos (of Orion's belt, for example, including the Horsehead nebula) that rival those taken with equipment costing \$30,000 or more with a total investment at this point of around \$800. Pictures of the Andromeda galaxy, North American nebula, and the Milky Way were also shown that compare favorably to many calendar pictures we all have seen.

Post-photo processing is a large part of this process. Exposures of different lengths capture different information. Shorter exposures capture detail in bright areas without washing out, and longer exposures capture the faint detail at the edge of galaxies, for example. Combining these with different software such as Deep Sky Stacker and Photoshop preserves the detail in all the exposures and different stacking techniques eliminate artifacts such as noisy pixels, satellite trails, or laser pointer trails. Post-photo processing is about 3/4 of the work of producing these pictures, but the results are truly stunning and inspiring.

Robert Arn is currently in the Mathematics PhD program at CSU and has been taking astrophotos for about 5 years. He has had his photos used as the APOD and for the EPOD (Earth Sciences Picture of the Day). He was active in astronomy public outreach events in Decatur Illinois, where he did his undergraduate work, and has been a resident of Fort Collins for about 3 months.

November 5 and 6 at Keota Site, from Gary Garzone

Unbelievable good nights of viewing for this time of year, two clear nights with no winds on the high plains prairie on a new moon weekend. Friday night we had a crowd of about 8 people, and Saturday night maybe 15 people took advantage of the great weather and skies. Friday was the night for sure with total clear skies all night till dawn, but it got very cold around 23 for low. Saturday night it was much warmer with lows probably around low 30's only. Planetary nebula and galaxies this time out, just way too many objects to name, Favorites like NGC 253, NGC 891, Stephan's quintet, Veil, Crescent, Blue Snowball, Blinking Planetary. Maybe 100 objects in all? I used the Night Sky Observers Guide for faint favorites.

Hartley comet was found and still good views Comet had moved quite a bit in one night. I was looking for it in Gemini Friday night and it was to the left of bright star Procyon already by Saturday night.

Orion we were splitting the Trapezium four stars into six piazium? Easily see six stars by splitting those doubles plus many baby nursery stars, glittering specks of stars in the dust clouds surrounding the star field Never have I seen it quite that good, and I have Robert Grover and few others to confirm the fish stories. Seeing was good Friday and periods of Saturday night were 6 or 7 maybe?

Jupiter: we saw the moon shadow dot on surface at 1 am or so? Anyway awesome views of everything, What a night. Challenge objects were few NGC and IC stuff.

We did Horsehead and Flame nebula in Orion too, elusive views for most scopes. 30 was nailing them easily

.Dark skies make all the difference. Have scope will travel is the only way anymore. Light domes are growing, even out there in distant views. Is there no place left for us dark sky marines to play?? bye, Gary

GLOBE at Night Results Released, and Bahtinov Focusing Mask from Tom Teters

Greetings folks,
Well they put the results out and man do US/Europe stand out. Check it out at: <http://www.globeatnight.org/> Click on MAP at the top.
There also KMZ's for Google Earth.

Some time ago, after the news of the Bahtinov Mask came out, I found the forum where Russian astronomer Pavel Bahtinov announced his find. The members were very excited about it and began to produce variant of his mask that would diffract starlight and help the user to very accurately focus their scopes. They are fairly easy to make, if not a little time consuming, all it takes is a opaque media, (I used ruby-red lith.), the printed pattern and a sharp utility/exacto knife.

The Carey Mask
<http://www.btinternet.com/~gfcarey/careymask.htm>

was one of those and he put together a nice set of page many links, including one to Pavel's webpage.

So if your interested in the theory or how to make one, how a Bahtinov Mask works, want to see animation of the complex diffraction pattern in action, even some star tests, check out the link above.

From Andrea Schweiter: NASA's EPOXI mission flew by Comet Hartley 2 Nov 4

If you would like to learn more about this NASA mission, mark your calendars for Friday evening, December 17th when the public star night speaker at the Little Thompson Observatory will give an update on the research results and photos from the comet flyby.

Andrea Schweitzer
Little Thompson Observatory
www.starkids.org

NASA MISSION SUCCESSFULLY FLIES BY COMET HARTLEY 2

NASA's EPOXI mission successfully flew by comet Hartley 2 at about 7 a.m. PDT (10 a.m. EDT) today, and the spacecraft has begun returning images. Hartley 2 is the fifth comet nucleus visited by a spacecraft.

Scientists and mission controllers are currently viewing never-before-seen images of Hartley 2 appearing on their computer terminal screens.

The mission team and scientists have worked hard for this day, said Tim Larson, EPOXI project manager at NASA's Jet Propulsion Laboratory, Pasadena, Calif. Its good to see Hartley 2 up close.

Press release from Ball Aerospace:

BALL AEROSPACE'S DEEP IMPACT FLYBY SPACECRAFT IMAGES COMET HARTLEY 2 FOR NASA'S EPOXI MISSION

The Ball Aerospace-built Deep Impact Flyby spacecraft successfully completed another first for NASA on November 4 when its onboard cameras captured spectacular images of comet Hartley 2 as part of the EPOXI mission. This was the first time in history that two comets -- Hartley 2 and Tempel 1 -- have been imaged by the same spacecraft, same instruments, and with the same spatial resolution.

The rendezvous with Hartley 2 is the third mission for the Deep Impact spacecraft. The first was in 2005 when the Impactor aboard the Deep Impact spacecraft collided with comet Tempel 1 and excavated debris from the comet's nucleus. Images captured by cameras aboard both the Impactor and the Flyby have been used by the scientific community to study the composition of Tempel 1. The second was the Extrasolar Planet Observation and Characterization (EPOCh) mission that ended in August 2008, providing observations of the Earth in both visible and infrared wavelengths.

"Deep Impact is proving to be a spacecraft that keeps on giving," said David L. Taylor, president and CEO of Ball Aerospace & Technologies Corp. "When it launched in January of 2005, the Deep Impact mission was the priority, so it's extremely rewarding to see a three-peat performance six years later that provides more beneficial science data.

Science observations of comet Hartley 2 began on Sept. 5, with the mission's encounter phase commencing the evening of Nov. 3, when the spacecraft was about eighteen hours from the time of closest approach to the comet's nucleus. The spacecraft flew past the comet at approximately 8 a.m. (MDT) on November 4 when the spacecraft was re-oriented to maintain imaging of the comet nucleus while pointing its high-gain antenna at Earth in order begin downlinking nearly 5,800 images.

Hartley-2 is the fifth time that a comet has been imaged close-up. In the months leading up to its closet encounter with Comet Hartley 2, the spacecraft responded to multiple

commands to align itself for optimum viewing. Approximately the size of a subcompact car, the spacecraft had already used about half of its 85 kg of hydrazine fuel to complete the encounter with Tempel 1. Following the Hartley 2 imaging, it will still have enough useable fuel, 4 kg, to support science observations from its current orbit, should NASA task it with a new assignment.

Ball Aerospace was the 2005 Deep Impact mission prime contractor, responsible for the two-part spacecraft: the Impactor spacecraft and Flyby spacecraft; three high-resolution cameras; algorithm development; environmental testing; and launch and mission support. Since its launch, the Deep Impact spacecraft and mission team have logged 3.2 billion miles. Because the vast majority of mission costs are the initial design, testing and launch, the recycled Deep Impact provided savings on the order of 90 percent that of a hypothetical mission with similar goals, starting from the ground up.

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Ball Aerospace was teamed with NASA's Jet Propulsion Laboratory and the University of Maryland on the Deep Impact and its subsequent missions.

More information about EPOXI:
<http://epoxi.umd.edu/>

Geminid Meteor Shower Peak December 13-14

Total Lunar Eclipse December 21
Totality from 0041 to 0153 MST

Best Looks

Moon by Saturn 12-1; by Venus 12-2 and 12-31
By Mercury 12-7; by Jupiter 12-7
Mercury difficult in SW at dusk
Venus Greatest brilliancy in predawn 12-4
Mars difficult in SW at dusk
Jupiter in S at dusk
Saturn in SE in predawn
Uranus by Jupiter in Pisces, evenings
Neptune in Aquarius in S at dusk

Date	Mag	Starts			Max. <u>Altitude</u>			Ends		
		Time	<u>Alt.</u>	<u>Az.</u>	Time	<u>Alt.</u>	<u>Az.</u>	Time	<u>Alt.</u>	<u>Az.</u>
01 Dec	-1.8	05:33:34	21	N	05:33:34	21	N	05:35:17	10	NNE
02 Dec	-1.4	05:58:50	13	NNW	05:59:09	13	NNW	06:00:45	10	NNE
03 Dec	-1.0	06:25:05	10	NNW	06:25:35	10	N	06:26:05	10	N
05 Dec	-0.9	05:42:17	10	N	05:42:17	10	N	05:42:26	10	N
06 Dec	-0.9	06:07:36	10	N	06:08:25	11	N	06:09:14	10	NNE
07 Dec	-1.3	06:32:47	10	NNW	06:34:39	15	NNE	06:36:31	10	ENE
08 Dec	-0.8	05:25:05	11	NNE	05:25:05	11	NNE	05:25:32	10	NNE
09 Dec	-1.2	05:49:47	14	N	05:50:47	16	NNE	05:52:43	10	ENE
10 Dec	-2.2	06:14:29	13	NNW	06:16:44	30	NNE	06:19:23	10	E
11 Dec	-0.9	05:07:37	15	NE	05:07:37	15	NE	05:08:46	10	ENE
11 Dec	-3.6	06:39:25	10	NW	06:42:23	87	SSW	06:45:19	10	SE
12 Dec	-2.3	05:32:19	32	NNE	05:32:37	33	NNE	05:35:18	10	E
13 Dec	-3.7	05:57:02	34	WNW	05:58:09	79	SW	06:01:05	10	SE
14 Dec	-0.5	04:50:13	16	E	04:50:13	16	E	04:51:02	10	E
14 Dec	-1.9	06:21:46	14	W	06:23:25	21	SW	06:25:45	10	S
15 Dec	-1.9	05:15:00	30	SE	05:15:00	30	SE	05:16:40	10	SE
16 Dec	-1.5	05:39:48	17	SSW	05:39:48	17	SSW	05:41:09	10	S
23 Dec	-1.2	18:38:20	10	SSW	18:39:19	18	SSW	18:39:19	18	SSW
24 Dec	-1.2	17:29:55	10	SSE	17:31:06	12	SE	17:32:15	10	ESE
24 Dec	-0.4	19:03:07	10	WSW	19:03:46	15	WSW	19:03:46	15	WSW
25 Dec	-3.0	17:53:03	10	SSW	17:55:49	40	SE	17:56:35	31	E
26 Dec	-3.2	18:17:49	10	WSW	18:20:39	54	NW	18:20:49	53	NNW
27 Dec	-3.0	17:07:37	10	SSW	17:10:23	43	SE	17:13:10	10	ENE
27 Dec	-1.2	18:43:23	10	WNW	18:44:56	19	NW	18:44:56	19	NW
28 Dec	-3.1	17:32:22	10	WSW	17:35:12	51	NNW	17:37:27	15	NE
29 Dec	-1.7	17:57:53	10	WNW	18:00:12	21	NNW	18:01:23	17	N

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>