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


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/~rstencel/Chamberlin/

Cheyenne Astronomical Society    7 pm Dec 17    Elections and party, please RSVP. Cheyenne Botanical Gardens
http://home.bresnan.net/~curram/

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 AAPD 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 paziun? 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?

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

NASAs 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 NASAs 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
## International Space Station Passes for Loveland – Fort Collins

### December 2010

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ISS predictions from: