

The Objective View

November 2002
Newsletter of the Northern Colorado Astronomical Society

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Meetings first Thursday of each month

Next Meeting: November 7 7:30 pm

Open Night
Bring images, equipment, stories to share

NCAS Business at 7 pm

Meeting directions
Discovery Science Center
703 East Prospect Rd, Fort Collins
<http://www.dcsm.org/index.html>

In Fort Collins, from the intersection of College Ave and Prospect Rd, head East about 1/2 mile. See the Discovery Center sign to the South. Enter the West Wing at the NE corner. From I-25, take Exit 268, West to Lemay Ave, continue West 1/2 mile, see Discovery Center on the left.

NCAS Star Party Dates

November 1, 2, 28, 29

Cactus Flats site is on undeveloped parcel of prairie about 6 miles West of Briggsdale. Take Colo Hwy 14 East from I-25 (Exit 269). Go 19 miles East to Ault. Continue 18 miles East of Ault. At County Rd 65 (Milepost 170), turn North, go one mile.

Site is through the wire gate on the right, no road, close gate and set up. Beware of the cactus. Our standard nights are the weekend of the New Moon, sometimes a weekend before and after. The site is now officially wheelchair accessible, but there are no facilities so bring essentials. Call **Tom Teters**, starmon@jymis.com, with questions about star party status or dates, 482-5702 or 482-0807.

Discovery Science Center Starwatching

November 8	6:30 pm
January 10	6:30 pm
February 7	6:30 pm
March 7	6:30 pm
April 4	7:30 pm
May 9	8:00 pm

Longmont Astronomical Society 1st Quarter Moon Public Viewing Nights, Flanders Park
November 9, December 7

Other Events

Little Thompson Observatory Star Night, Berthoud
November 22 Star Night 7 – 10 pm
<http://www.starkids.org>

Cheyenne Astronomical Society
November 22 Cheyenne Botanical Garden
<http://users.sisna.com/mcurran>

Open House, Chamberlain Observatory, dusk to 10 PM
Nov 16, Dec 14 303 871 5172
<http://www.du.edu/~rstencel/Chamberlin/>

Longmont Astronomical Society
November 21, Longmont Christian School, 550 Coffman St
<http://laps.fsl.noaa.gov/cgi/las.cgi>

October 3 Program

Astronomy with CCD Cameras:
You, too, can do serious astronomy at home
by Gary Emerson, Ball Aerospace

Gary has long promoted the value of commonly available telescopes for scientific work. A 10 to 12 inch aperture today can surpass the power of any observatory on Earth in the 1970's, because CCD cameras provide new leverage for smaller telescopes. Gary was able to image Comet Shoemaker-Levy 9 with a 6 inch f/4 reflector a year before it hit Jupiter. He focused on images made with his dedicated 10" f/4.5 reflector, built around a HiSyS 23 camera. It has a 16 bit Kodak chip, 512x764 array of 9 micron pixels. It has accurate temperature control. He has plotted focus as a function of temperature, so seldom has to adjust it further. He carefully picked his home observatory site, near a State Park for dark skies. The site is poor for planetary imaging, because the air is usually unsteady. He has imaged meteors, with a 24mm Nikon f/2.5 lens attached to the camera. A chopper blade on a 1200 rpm motor cuts meteor trails into 30 millisecond segments. He can image meteors brighter than 2nd magnitude. He observed meteors last year from central Nevada, an extraordinary dark site. The Moon offers a chance to do serious scientific work. Geologists took over for years after the Apollo missions, but amateur astronomers can still contribute by observing for lunar transient phenomena. These will likely be meteor impacts, and monitoring of the dark portion of the Moon is needed. Monitoring the Earthshine portion would allow the site of a new impact to be mapped. He suspects he imaged an impact during a total lunar eclipse, but only had a flash on a single frame. Gary also promoted the need to map lunar rays, and subtle and small lunar elevation changes, only detectable near the Terminator. He showed his image of the crater Archimedes, and showed a densitometry graph showing a dip in the crater floor adjacent to the mountainous rim. This is thought to indicate that the floor

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of the crater has slowly rebounded over a million years, leaving a gap next to the rim. Gary also did monitoring for Southwest Research, attempting to detect the Moon's atmosphere. Imaging in a narrowband sodium line allowed him to detect very weak emission from a tenuous sodium layer, elicited by the Sun. The emission should be monitored over a Solar cycle, twice a month.

The crater Aristarchus has been the site of many reports of transient glows, and should be monitored. On one night Gary detected blue enhancement in the Moon's spectrum. This was 2 days after a solar flare, and around the Lyrid meteor maximum, the cause remains unknown. Asteroids are a huge opportunity for amateurs, with 90% of positional data generated by the amateur community now. Automated systems can now gather images, format data appropriately and forward it to the IAU, untouched by human hands. Photometry is needed to get rotation rates. Gary did a sequence of 5 minute exposures to confirm presence of one asteroid, and discovered another. He imaged an asteroid occultation of a star lasting 8.5 seconds. Last December he had 2 occultations within 13 days. There are 6 observers who participate in Colorado, and more can be used to determine asteroid profiles. Comets also need amateur input. CCD imaging is unique in its ability to show the massive extent of a comet 10 times beyond its visible shape. Comet imaging with film suffers from the toe in the film response curve. Faint portions are not recorded by film, but a CCD camera is linear in response at even very low light levels. Gary illustrated with images of Comet Hale-Bopp, which was the solar system's largest object during its pass. Comet Schwassman-Wachmann 1 has intermittent outbursts and flares from 17th to 12th magnitude.

Gary imaged Comet DiVico in 1995, and detected helical traces in its tail. Planet imaging is not an objective, but he does image the area around Jupiter and Saturn, looking for signs of captured comets. Deep sky imaging can surpass anything done in the film era. He is probing the areas around planetary nebulae, and a long-term project is an atlas of dark nebulae. He would like to match the coverage of E. E. Barnard's atlas, with his red-sensitive detector. He found dark nebulae near the California nebula, in an arc around it. Variable stars are a traditional target of amateurs, now benefiting from CCD work. Galaxies are a subject Gary never dreamed he would work with, but the CCD camera can show galaxy haloes, faint outlying regions unknown in the film era. Gary independently found a light bridge, 0.25 magnitude above background, connecting M31 and NGC 205. He consulted Halton Arp, who told him the bridge was an unpublished discovery from Fritz Zwicky with the 48" Palomar Schmidt. Faint satellite galaxies like those around NGC 7331 are now targets for amateur imagers. Gary can monitor a variable star in M33, a magnitude 22.2 supergiant. Spacecraft can be imaged from the ground, and a recent call was made for Contour spacecraft images when it malfunctioned. Gary showed his image of Comet Macholz on an Astrophysical Journal cover, encouraging CCD imagers to shoot for scientific contributions. A camera for scientific work costs about \$2000 to \$3000 now. He expects CMOS detectors to replace CCDs. Each pixel can have its own amplifier. They have non-destructive readout. Read noise and dark current are now high, but these problems should be solved, and the chips will be very inexpensive. The Department of Defense wants CMOS to allow near real time image processing, and the movie industry wants to get away

from film. Gary uses Qmips and recommends Winmips software. A good new resource is The Handbook of Astronomical Image Processing by Berry and Brunell, available from Willmann Bell.

October 3 NCAS Business

President Jan Kok called the meeting to order. Brad Jarvis gave a summary of the recent conference on life at the University of Colorado, Boulder. One talk reviewed the role of gene mapping in clarifying the relationship between species. Corey Radman recruited NCAS members to participate in Discovery Science Center Space Day on October 12. Brad Jarvis donated 70's and later Sky and Telescope magazines to anyone needing them. He announced a Rocky Mountain Mars Society meeting on October 23, on Mars Base structures. Dave Chamness has the club telescope.

It is weird how at first it looks out of balance with the ring system ... a gibbous phased planet will do it every time.

<http://ciclops.lpl.arizona.edu/>

Click the "Imaging Diary: Beyond Jupiter" for a higher res version.

LeRoy

FROM THE MINOR PLANET MAILING LIST

10/21/02. For

the full text or to subscribe, please visit:

MPML Home page: <http://www.bitnik.com/mp>

MPML FAQ: <http://www.bitnik.com/mp/MPML-FAQ.html>

MPML's Yahoogroups page:

<http://www.yahoogroups.com/group/mpml>

----- Forwarded message -----

Date: Mon, 21 Oct 2002 10:39:30 -0700 (PDT)

From: ngc5139@earthlink.net

Reply-to: Ron Baalke

baalke@zagami.jpl.nasa.gov

To: Minor Planet Mailing List

mpml@yahoogroups.com

Subject: {MPML} Earth's Little Brother Found (Asteroid 2002 AA29)

<http://news.bbc.co.uk/1/hi/sci/tech/2347663.stm>

Earth's little brother found

The asteroid was found almost by accident

By Dr David Whitehouse
BBC News
October 21, 2002

Astronomers have discovered the first object ever that is in a companion orbit to the Earth.

Cactus Flats
Obs. Report 10/12/02

A little late but.....

After a barely satisfying new Moon weekend the forecasts of clear skies last night was enough temptation to pack up and head out again. Hoping for a spot at Crow Valley camp ground didn't pan out as every spot was occupied, after hunting season it should be more deserted. Headed over to Cactus Flats and using my camper as a light shield helped block the local houses from view. With Moon set not until 11:22 pm by the time I was set up it was still favorably positioned for observing. Scanning the terminator revealed good seeing conditions that easily supported 300x. The mountain range NNW of Mare Serenitatis, Montes Caucasus was very interesting with the contrast between peaks and valleys. Also the interesting Rima Ariadaeus in the eastern part of Mare Tranquillitatis. Steve arrived around 9:00pm and we waited for Luna to set behind the mountains. Along with the good seeing the rapidly darkening sky became very transparent. This is a fun this

time of year with all the winter constellations rising in the east after sunset. Low southern objects like the Sculptor Galaxy (NGC253) along with the Helix Nebula provided nice views before they moved into the Denver Nebula. By the time Orion had risen to dominate the SE sky the transparency was as good as I can recall at the Flats. M42 was spectacular, for the first time Steve saw the red coloring of the nebula. I have only see this a few times and it was more of a rose color but this night it was plainly red. Only the area right around the trapezium had the normal blue/green color, everywhere else was vivid red. Components E & F of the Trapezium split cleanly at the lowest powers. Even if you have viewed M42 a 1000 times conditions that night bring back memories of the first time viewed, it appeared more like a photograph than the normal eyepiece view. By this time Saturn had risen high enough to get out of the muck and literally took over the viewing the rest of the night. Some of you who frequent the Flats may recall those rare nights when the seeing and transparency combine for some fantastic planetary viewing, well this was one of those nights. I would estimate that 90% of the time it was good and 40% of the time it was very good. I recently pick up two pairs of UO orthos for my binoviewer, having not owned an Ortho for 10 years I have forgotten how nice they are for planetary observing. The crepe ring appeared as a silvery stripe near the planet with a clearly defined inner edge. Cassini's Division looked like a black inky stripe around the rings. The atmosphere of Saturn had several

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bands of color including the brownish stripe near the equator, the green ring near the pole and several yellow bands in between. Jupiter is now 45 degrees away from Saturn and never did clear the soup as clouds began to move in from the NE. A classic night on the Flats even with the wind that came up around 2:30am making the 25 degree temp a little harsh in bare skin. By 4:30am there was a fog type haze moving in putting an end to the fun. One of the best observing nights out there in a long time, to bad we were the only ones enjoying it. Maybe next time, ya won't know if ya don't go!

DD

Gary G and I sure had fun yesterday at the Colorado Astronomy Day, which took place at the Museum of Nature and Science in Denver. Wish you all could have joined us, you would have been glad you did. (We were not able to stay for the evening observing session unfortunately.)

I got to meet up again with Vic and Jen Winter, who I went to Madagascar with last year for the total eclipse, and that was fabulous! There is a bond you develop when traveling the world to view total eclipses together! :) (They are also the Reflector editors, that's the only reason my picture was in it last year after the eclipse as many of you LASers will recall.)

Funny thing is too, both Gary and I were stars on the big screen! We had to laugh a lot about that one. Gary was in the movie that "that guy" (really sorry, but I don't remember his name, but remember going to the website) did at one of last year's annual parties--was it RMSS, Gary? They showed the movie during the first hour presentation and from my understanding it will be appearing on PBS and the Discovery Channel in the future! The movie also showed Jim S's scope multiple times--it's a beaut! (Gary pointed out they

showed Jim S too briefly, but I missed it.) Dr. Bob Stencil also spoke during that first hour.

The second hour was a superb presentation of the upcoming Pluto-Charon mission! I've been waiting for that mission for a looong time. (Let's pray it doesn't get cancelled again.) And let me not forget it is also a mission to the Kuiper Belt. I only learned yesterday that they now classify Pluto-Charon as a binary planet rather than Charon being a moon since the barycenter is not inside of Pluto. Always something new to learn. The speaker, Dr. Alan Stern, was excellent and his humor wonderful.

Gary, I will let you tell about the meteorite display, as you know more about it and the wonderful people we met, Sharon and Richard Walker, who took the 4.5 billion year old meteorite out of its glass cage to have our picture taken with it! How amazing was that?! You will see photos in the upcoming LAS newsletter.

The third hour was Vic and Jen Winter doing their presentation on eclipse chasing, "Seeing the World on a Deadline," centered mostly around our trip to Madagascar last summer with a fabulous slideshow they have on CD with African music, etc. I can see why they centered their presentation around Madagascar because from what I heard from other eclipse chasers on the trip, this was one of the most beautiful coronas ever! (This CD is free if you request it at www.icstars.com. The CD has other photos from trips to Bolivia, Africa, etc.) And as I remember saying last year in my posts to FRAC, the diamond ring effect was actually the biggest surprise for me in its beauty! Not to diminish the eclipse by ANY means, because nothing can touch that either, but..... no static photo can capture the "transition" of the diamond ring effect! You cannot photograph something such as "sparkle" and you cannot photograph the diamond ring effect!!

Also, conditions were perfect for the green flash! Yes, I saw it, but my video camera did not pick it up. However, Vic and Jen's photos sure did! I

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was in Vic and Jen's Madagascar slideshow several times and they also used 9 of my own photos in their slide show, wow, so that was quite fun and flattering for me. :)

Great solar observation on the terrace of the museum as well (and what a beautiful view from up there of Denver!), with two Ha filters out of the 8 or so solar scopes. Someday I will have a Ha filter! I started out as a deep sky lover, but you know what, through the years I have come in closer and closer and closer.... "Near Sky is where it's happening!" ;)

Gary and I both ran into several people we knew, including people from Longmont and Denver clubs, as well as an old (young) physics professor of mine from CU days! It's a small world when you venture out into it! ;)

--KarenM

Nearly eight days ago (10/4 8h UT), (1) Ceres was at opposition to Earth, and presented a 0.63" (arc-sec) disk.[1] Clouds foiled that and the next night's attempt to observe (well, and the several days previous too), but Saturday night (10/6 UT), I did manage both steady seeing (Pickering 9, sometimes 8) and decent transparency (LM 6).

A number of friends had gone up to where I teach sixth grade astronomy for an evening of photons.

It did take a while for the seeing reach the levels cited above. For instance, we viewed Epsilon Lyra, the famous "double" in Lyra in the 22" Cassegrain.

Alan Baxter and I managed to see Uranus with averted vision. Mu Cap was a great help. Personally, I was quite astonished when I put my binoculars up to confirm my estimated position angle and see it was dead on, and no competing stars for brightness that could counter this observation.

A short time later, I powered up to 277X with my 12" f/10 SCT (the Big Blue Beast) and a disk on Ceres was readily discernable. It was definitely small disk, but good disk. I was impressed. I guess that Pickering 9 (with only moments of 8) made the difference.

Got occultation?

LeRoy Guatney
Astronomer/General

[1] all data on Ceres per RASC 2002 Observer's Handbook.

From S&T's weekly news bulletin:

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- STAR SPEEDS AROUND MILKY WAY'S BLACK HOLE
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- After tracking its motion for 10 years, astronomers have caught a star
- careening around the supermassive black hole at the Milky Way's center.
- Their observations, reported in yesterday's issue of Nature, provide
- definitive proof that a roughly 2.6-million-solar-mass black hole lurks at
- the core of our galaxy. "It's an incredible breakthrough," says team
- leader Reinhard Genzel (Max Planck Institute for Extraterrestrial Physics,
- Garching, Germany)....
-
- Astronomers have long thought the Milky Way harbors such a black hole in
- its center. But undisputable evidence has been scarce....
-
- The beauty of the new result, says Genzel, is that the existence of the
- black hole is proven beyond doubt by observations of one single star....
-
- >
- http://SkyandTelescope.com/news/current/article_766_1.asp
-
- From <http://www.eso.org/outreach/press-rel/pr-2002/pr-17-02.html>:
-
- ...It turns out that earlier this year the star approached the central Black Hole to within 17 light-hours - only three times the distance between the Sun and planet Pluto - while travelling at no less than 5000 km/sec.
-
- ...Even though it moves relatively close to the Black Hole in the present orbit, S2 would have to be at least 70 times closer (about 16 light-minutes from the Black Hole) before it would risk being disrupted by tidal forces. Astronomers refer to the extreme orbital points as "perenigricon" (closest to the Black Hole) and "aponigricon" (farthest away).
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- Imagine if there were creatures on a planet around the star near the black hole at the center of our galaxy. What an interesting view they would have!
-
- Cheers,
- Jan
-

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Scope for Sale

Coulter 10 inch Dobsonian. Like new. Includes Kellner eyepiece, eyepiece rack, red-dot aiming device, aperture stop, dustcap. \$600. Call Gene, 970-568-0545.

From Archer Sully: Sky Transparency and Seeing Forecast

I've altered the following link for Colorado.

http://cleardarksky.com/csk/prov/Colorado_clocks.shtml

Best Looks

Moon	by Mars on 11/2, by Saturn 11/21, by Jupiter 11/26
Mercury	not seen this month
Venus	low in ESE predawn, by Mars final week
Mars	low in ESE predawn
Jupiter	High in S predawn Europa partially occults Io 0108 to 0114 11/18
Saturn	Visible from early evening through night
Uranus	in Capricornus early evening
Neptune	in Capricornus early evening

Last Leonid Meteor Storm for the Century best on Tuesday, November 19, predawn, between 3 and 4 am. Counts over 1000 per hour would be expected, but the view will suffer some due to the nearly Full Moon. Comet Temple-Tuttle will undergo perturbation of its orbit in August 2029 which is expected to prevent Leonid storms in 2031 and 2065.

From Jim S: Best Moon Site I've Seen:

<http://www.moon-phases.com/>

From: Dan Laszlo
2001 S Shields St Building H
Fort Collins CO 80526

Clear Sky Clock Update from Tom Teters

Attila has just published new area Clear Clocks for some of our favorite sites. See the NCAS weather page!!
Now we'll NEVER make that 40-80 mile trip and experience clouds skies again, whewwwww. tomt

TO: