

The Objective View August 2001
Newsletter of the Northern Colorado Astronomical Society

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Meetings first Thursday of each Month

Next Meeting:
August 2 7:30 PM
An African Solar Eclipse
Archer Sully

Open House, Chamberlain Observatory, dusk to 10 PM
<http://www.du.edu/~rstencil/Chamberlin/>
Aug 25 303 871 5172

Club business from 7-7:30 PM

Longmont Astronomical Society 7PM
<http://laps.fsl.noaa.gov/cgi/las.cgi>
August 16 Longmont Christian School, 550 N
Coffman St
August 25 Public Star Party, Flanders Park

Meeting Directions
Discovery Center Science Museum
703 E Prospect Rd, Fort Collins

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 its NE corner. From I-25, take Exit 268, West to Lemay Ave, continue West 1/2 mile, see Discovery Center on the left.

Rocky Mountain National Park Summer Starwatching
Contact Dan Laszlo if you can volunteer with a scope this summer. Dates are August 10, August 24.

Carter Lake Starwatching at Last Quarter Moon
Contact Tom Teters if you can bring a scope to Carter Lake, west of Loveland, on August 11. Email starmon@jymis.com

Other Events

Little Thompson Observatory Star Night, Berthoud
August 17 7PM
Dr. Steve Jordan NASA Chandra X-ray mission

Cheyenne Astronomical Society
August 16-19 Weekend Under the Stars, Foxpark
<http://users.sisna.com/mcurran>
WIRO observing is anticipated on August 17

July 5 Program: 100 Globular Clusters Plus or Minus 50 by Leroy Guatney

Probably 50 are visible in a 2.4" refractor, 100 in typical (6"-8") amateur scopes, and 150 in large amateur scopes. On the Herschel 400 List (more than just the 29 Messiers and a few NGCs), there are 33 Herschel globulars, and 105 total with NGC numbers, 3(4) IC, and still another 43 others. Two are named as stars (Omega/47 Tucana), and M 22 was first thought to be a star.

Observing tip: use same eyepiece consistently for comparing scale of apparent sizes (NGC 288)

This link has links to seds.org, Brian Skiff's ftp site, Bill Harris's web page/ftp, and messier45.com :

¶ <http://home.rmi.net/~lwlg/SCI/catalogsG.html>

¶ Academic bibliography may be found from Skiff's and Harris' sites

What are GC's?

Globular shaped, dense stellar masses, 100,000's to millions of stars Most if not all galaxies have them. Most around the Milky Way are >10 billion years old. Magellanic GC's are younger in the tens of millions of years old (LMC NGC 1818 and NGC 1850 are only 40 million years old) . Milky Way GC's are centered on a point 8 kpc toward Sagittarius (Shapley: 15 kpc). Thick disk Population II GC rotate with the galactic disk and are more circular, and slower orbits.

Halo Population II do not rotate with the galactic disk, and some even are in the opposite direction of rotation. GC helped to measure Milky Way mass at one-half trillion solar masses and has led to the theory of dark matter. Evolutionary model has the Milky Way forming out of a sphere of matter and due to increased spinning as it collapsed, a disk formed. GC's seem to be the "eddies" of this process. An interesting analogy to Gas Giant planets, Brown Dwarfs, and stars. Dwarf Spheroidal Galaxies (dSph's) are super globulars and may just be an upper bound on the definition of a GC, and elliptical galaxies may be their upper bound. Omega Centauri (NGC 5139) may just be a dSph. GC are Distinguished from Open clusters by their Color-Magnitude Diagrams (observational H-R Diagram) M 11 was once thought to be a GC and its CMD disproved this. Shapley and Sawyer-Hogg classifications I-XII (densest to sparsest). My extension to the SS-H class is a galactocentric description. There may be more in/around the MW that we can't see.

Where are the GC's in the sky? Hidden behind the hub/bulge of the MW, Southern hemisphere, I have traveled twice to Tucson to observe, and once to Big Bend National Park. 10-12.5 degrees further South adds perhaps as many GC's to your reach above the horizon. You can pretty much see GC's all year, but you have to work at it. They are much sparser in the winter time (NGC 1049/Fornax, M79/Lepus, NGC2298/Puppis, NGC 2419/Lynx, NGC4147/Coma Berenices, M 68/Hydra, and M53/Coma Berenices) but viewable. Concentrated most heavily in the galactic core region, Sagittarius, Ophiuchus, and Scorpius, are the three most populated constellations with 71 of my list of 141 MW/Sagittarius Dwarf Elliptical Galaxy GCs scattered around late Spring and Summer skies. Associated with the Magellanic Clouds. NGC 7006 in Delphinus is a good test for observing Magellanic GC's—they are two-thirds its apparent size. Other Galaxies with GC's are MW Satellite Galaxies (Magellanic Clouds, SagDEG). SMC 121, M 54 is associated with the Sagittarius Dwarf Elliptical Galaxy along with three other GC's. NGC 1049 mentioned above is with the Fornax Dwarf, as well as four other GC's—Fornax 1-5 (NGC 1049 is Fornax 3). G1 in the Andromeda Galaxy M 31, G1 is the brightest of 300 that were cataloged in that galaxy with the Mt. Wilson 100" or Palomar 200" telescope. There are several others in Local Group galaxies that are within reach of the bigger amateur telescopes such as M 33. UGC 9799 has 48,000 ± 16,000 GC's. Other resources are the Palomar Sky Survey (15 discoveries from the plates taken with 48" Schmidt Telescopes), Arp & Madore, Arp & Van den Bergh, two by constellation (Pyxis and Eridanus), G for Andromeda, Fornax, ESO survey, Ruprecht (list of open clusters), Van den Bergh-Hagen, sometimes abbreviated B-H, Lynga, Lund (Swedish list of Open Clusters), Terzan (red galactic core survey turned these up), Haute-Provence, Grindlay (never confirmed), Liller, Tonantzintla, Djorgovski, UKS (UK Schmidt Telescope). Completely Overlapping the above lists/catalogs are: GCL, Dunlop, Melotte, Berkeley, Lacaille, Collinder.

Some of my favorites are the Messiers, NGC 5139 (THE BEST!!!), NGC 288 (as big as M 13, but dimmer), NGC 5466

(near M 3 in the sky and as big, resolved stars in my 12" when my 10" couldn't), NGC 2419 (cool), NGC 6522/6528 (double GC), M 13 (of course), M 4 (nearest to Earth), M 22 (brightest and first discovered), Palomar 14 (faintest I have observed at magnitude 14.7). Observing tip: use same eyepiece consistently for comparing scale of apparent sizes (NGC 288).

Questions & maybe Answers???

Q: I can understand how they would measure radial velocity, but what about proper motion?

A: Well, I kind of hedged when I said that. I actually have not seen any mention of studies of proper motion. I have come across a few whose position data seemed way out of line, so I have wondered. My own speculation about the statements that researchers make about circular and elongated (note that it is not elliptical) orbits, may be application of statistics. If many GC's were in elongated orbits, because they would be moving slower further from the center of the MW, you would statistically expect to see more in the halo, but this is not the case. Thus, I have considered it possible that researchers have just applied a shotgun to their conclusions about how the halo GC's are distributed, and what types of orbits they may have.

Q: More of a comment really, was made about my calculation of the diameter of the Andromeda Galaxy, M 31.

A: It was based upon the photographic size of M 31 as stated by Hans Vehrenberg in his book, Atlas of Deep Sky Splendors, 4th ed., and the older distance data of 2.3 million light-years. This calculation yielded a diameter of 181,000 l.y. This calculation revised for today's distance of 2.9 million l.y. is 227,000 l.y. I mis-spoke when I said the diameter was 300,000 l.y. 300,000 l.y. is my estimate of the diameter of M 31's halo of GC's! So you can see that if the MW has a diameter of at least 200,000 l.y., it and M 31 are nearly twins. This brings up another point I didn't make in my talk. M 31 may have more GC's than the MW due to the presence of more massive (by comparison to the Magellanic Clouds, SagDEG, etc.) elliptical satellite galaxies (M 32, M 110, NGC 147, NGC 185, etc.). It is also possible with GC's as faint as AM-1 at 300,000 l.y. distance, these outer halo GC's may be harder to find. So, the MW and M 31 may be more like twins. So, the MW and M 31 may be more like twins than different..

Local Astronomy Internet Forum For Members

"Astro-Colorado" is a new Internet forum started by NCAS member Dave Larison. The list is intended to serve popular astronomy interests in the region and is open for public viewing. The site can also be used as a supplement to the NCAS webpage for announcements, discussions, and file uploads. Anyone can read the contents, registration is required if you wish to post. See:

<http://groups.yahoo.com/group/astro-colo>

Software For Sale SkyMap Pro version 4. \$25

By Chris Marriot of the UK. Includes printed manual.
Current version is Seven which goes for \$95 these days.
Randy Moench, 7348 Poudre Canyon Hwy, Bellvue CO
970-491-8429

Best Looks

Moon By Saturn 8/13
By Jupiter 8/15
by Venus 8/16
Mercury In E, dawn, by Jupiter 7/13
Venus In predawn E sky, by Jupiter 8/5
Mars Brilliant all month in Scorpius
Jupiter & Saturn In E at dawn last half of month
Uranus & Neptune Predawn in Capricornus

Comet Linear C/2001 A2 in the Evening Sky

This comet is now about 5th magnitude, an easy object for binoculars in the dark skies. It appears as a fuzzy ball, similar in surface brightness to the Andromeda Galaxy, and a little smaller, early in the month. Try to catch it before moonlight interferes. See the attached map. Recent images are collected at:

<http://encke.jpl.nasa.gov/>

A Few Iridium Flares

Calculated for Lemay and Trilby, Ft Collins

Date	LocalTime	(Mag)	Alt.	Azimuth
02 Jul	03:51:32	-8	50	276 (W)
02 Jul	22:57:36	-6	24	254 (WSW)
05 Jul	22:48:46	-7	21	260 (W)
07 Jul	03:30:10	-7	42	282 (WNW)
09 Jul	05:03:57	-7	68	249 (WSW)
11 Jul	03:14:50	-6	36	286 (WNW)
11 Jul	22:40:21	-6	13	273 (W)

From:
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TO: