

Comet C/2021 A1 (Leonard) and M3
Globular Cluster as recorded by
Jeffrey Kasoff on Friday, 3-Dec-2021

Observed and imaged at KWU
Observatory in Salina, KS between
4:30 and 6 am

Personal Log - I set out from home at 3:30 am under clear skies. Arriving at KWU at 4:15 am, I started snapping pics with a Canon 6D fitted to the 5" Antares achromatic refractor, focal length 1200 mm. FOV of the full-frame camera sensor was $1.1^\circ \times 1.7^\circ$. The refractor is piggy-backed to the 16" Ealing main scope, a Classic Cassegrain. The scopes ride on a modified german equatorial mount with old-fashion setting circles. The camera shutter was released remotely. Mirror lockup before each exposure was enabled.

I had no trouble imaging both the comet and M3 in the same picture. The predicted separation on Dec 3rd was less than 1 degree !!! I found the ability to compare the two fuzzies educational. Charles Messier, the 18th century comet hunter, cataloged 109 different fuzzies. He did not want to confuse his comet search with these static objects. He identified M3 in 1764 as a nebulae. It took two decades of improvements in optics for Wilhelm Herschel to see that M3 is composed of stars. Now we know that the globular cluster M3 is composed of 500,000 stars and resides at a distance of 32,600 light year from us. So, in the same picture I imaged two fuzzies, one a great gravitationally bound system of stars at a vast distance and the other characterized as a 'dirty snowball', just 0.44 AU away on Dec 3rd.

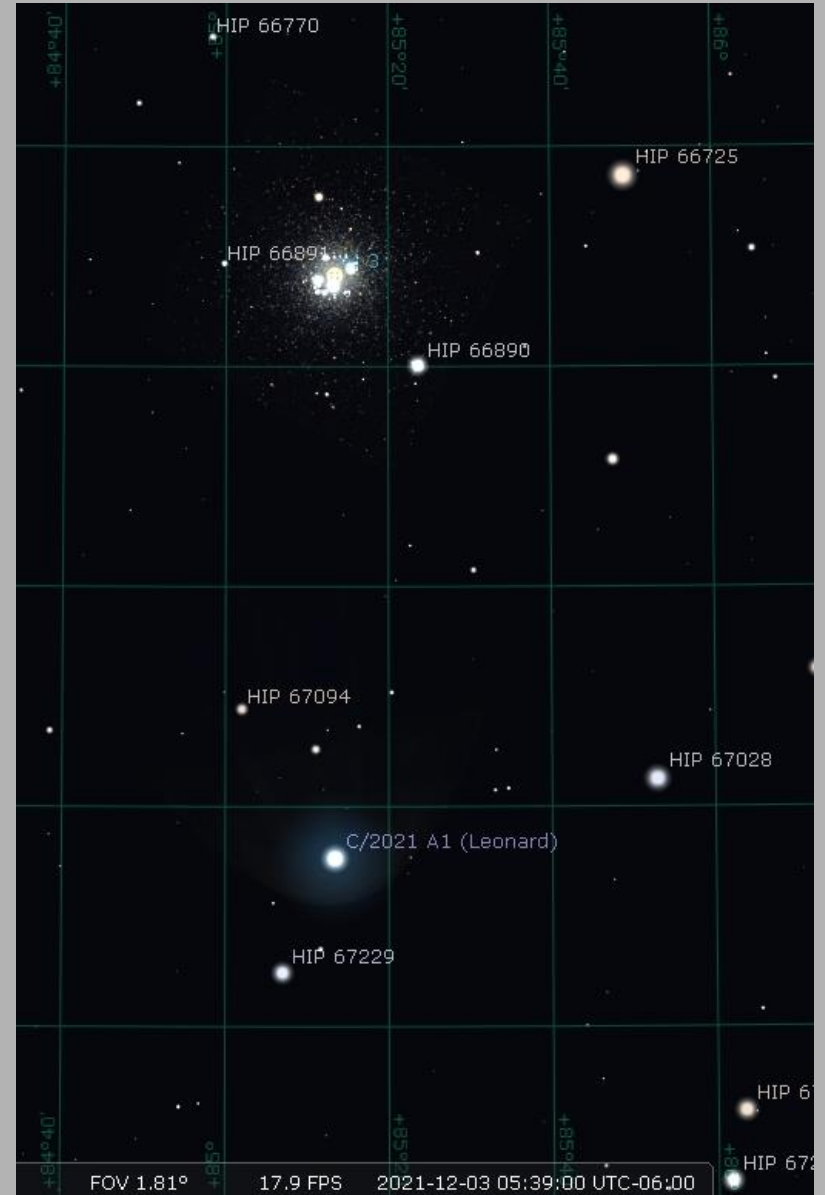
I could try stacking multiple images of the comet to enhance its tail, but I like the comparison of the two fuzzies. I must confess that my visual observations were even less impressive. The comet was only detected at all with averted vision. If I had been away from Salina's light polluted skies, then the comet would have been more impressive, both visually and photographically.

The following picture of the fuzzies is paired with the Stellarium predicted star chart, on slide 4. The wide angle star chart on slide 5 gives one an idea of where the comet was on the 3rd.

The slide 6 provides an ephemeris of the comet's coordinates and position through the 15th of December. It should be noted that the comet will be below the horizon after the 11th. So, any viewing after the 11th will be in the morning twilight. The comet will make a brief evening reappearance after swinging around the Sun between 16 - 25 Dec. But, it will low near the SW horizon about 6:15 pm under twilight skies. On the 17th it will lie below Venus.

Read more about Charles Messier at link - <https://www.space.com/16686-charles-messier-biography.html>

Star Chart created by Stellarium software showing the predicted positions of these fuzzies





JPL/HORIZONS Leonard (C/2021 A1) 2021-Dec-02 08:15:47
 Rec #:90004568 (+COV) Soln.date: 2021-Nov-29_21:42:32 # obs: 1838 (2020-2021)

IAU76/J2000 helio. eclipt deg. period=Julian yrs):

EPOCH= 2459371.5 ! 2021-Jun-06.0000000 (TDB) RMSW= n.a.
 EC= 1.000091281585553 QR= .6152047199034383 TP= 2459582.7942878464
 OM= 255.8879015650116 W= 225.0886967915709 IN= 132.6860310634133
 A= -6739.636654828425 MA= -.000376389157964047ADIST= 9.999999E99
 PER= 9.999999E99 N= 1.781E-6 ANGMOM= .019081661
 DAN= 4.18633 DDN= .72123 L= 41.6689427
 B= -31.3714349 MOID= .231482 TP= 2022-Jan-03.2942878464

(Azi)muth and (Elev)ation listed in table below for 5:30 AM (11:30 UTC) is applicabe for Salina, KS

Date__(UT)__HR:MN	R.A.__(a-app) (hr mm ss.ss)	DEC__(a-app) (deg min sec)	Azi__(a-app) (deg)	Elev__(a-app) (deg)	T-mag	delta - Distance from Earth (AU)	deldot - Rate Change in Distance (km/sec)
2021-Dec-02 11:30	13 35 48.93	+28 46 59.8	83.8	41.9	10.0	0.471	-59.8
2021-Dec-03 11:30	13 46 37.39	+27 51 10.5	84.0	40.2	9.8	0.437	-58.5
2021-Dec-04 11:30	13 59 01.98	+26 41 34.5	84.1	38.0	9.6	0.404	-56.8
2021-Dec-05 11:30	14 13 20.47	+25 13 58.4	84.2	35.2	9.4	0.372	-54.4
2021-Dec-06 11:30	14 29 52.65	+23 22 54.3	84.2	31.8	9.2	0.341	-51.3
2021-Dec-07 11:30	14 48 58.94	+21 01 35.3	84.3	27.6	9.0	0.313	-47.1
2021-Dec-08 11:30	15 10 57.41	+18 02 19.9	84.4	22.4	8.7	0.288	-41.5
2021-Dec-09 11:30	15 35 58.50	+14 17 57.1	84.4	16.1	9.0	0.266	-34.2
2021-Dec-10 11:30	16 03 57.61	+09 44 49.6	84.4	8.7	8.0	0.249	-25.0
2021-Dec-11 11:30	16 34 27.24	+04 27 26.2	84.4	0.2	8.0	0.238	-13.9
2021-Dec-12 11:30	17 06 33.35	-01 18 06.3	84.5	-8.9	8.0	0.233	-1.6
2021-Dec-13 11:30	17 39 00.87	-07 05 53.8	84.5	-18.0	8.0	0.236	10.9
2021-Dec-14 11:30	18 10 29.12	-12 28 52.4	84.6	-26.7	8.0	0.246	22.6
2021-Dec-15 11:30	18 39 50.13	-17 08 26.3	84.7	-34.4	8.0	0.262	32.6