



**Photographing the Universe
From Delanson, NY**

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Overview

“Delanson History in the making”

- **Observatory history –review**
- **Equipment for astro-photography**
- **Imaging**
 - **Background**
 - **Nebulae – in Milky Way**
 - **Galaxies – “far far away”**
 - **to limit of telescope**

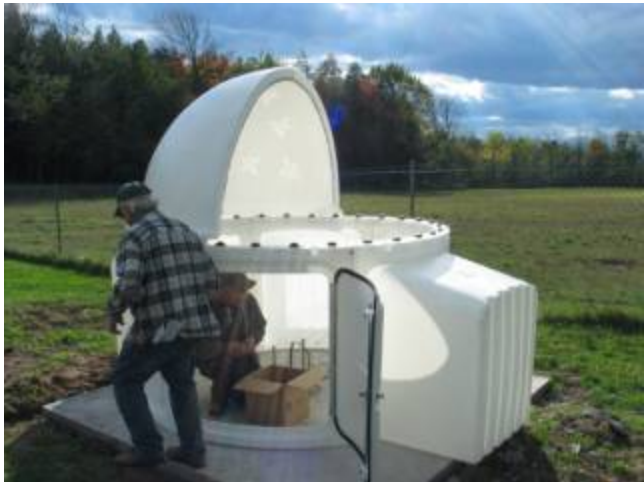
The Killer Project – The “Pad” on Frank Beretz Jr. Farm



Oct 3, 2007



Oct 16, 2007



Pier & telescope installed





Ready to observe & photograph 10/16/07

Equipment

Telescope: Meade LX200, 10” Schmidt-Cassegrain

Williams Zenithstar 66, piggyback

Camera: Canon 40D, (astro-enhanced)

- Typical 5 min exposures (autoguiding – *PHD Guiding*)
- “Stacked” with *MaxIM DSLR*
- Processed: *Photoshop*

Observatory: SkyShed Pod, Concrete pad & pier

Meade LX200 10" SCT,
Williams Optics 66mm Zenithstar piggyback



Solar System Objects

- **Planets**
- **Comets**
- **Asteroids**

Moon, 1/250 sec, Ave 11





Mercury

The Planets



Recent



2008



Comet Garradd, 1.27 AU (8-22-11)



Comet Lovejoy, 20 min (12-29-14)


**Asteroid 324 Bamberga (8/11/13)
140 mi wide, 0.8 AU, ~70,000 mph
(earth extinction event energy)**

300''

The image shows a dark field of stars of various colors and sizes. In the lower-left quadrant, there is a bright, multi-colored streaked object, likely representing the asteroid 324 Bamberga. In the lower-right quadrant, there is a horizontal yellow line with the text "300''" above it, serving as a scale bar.

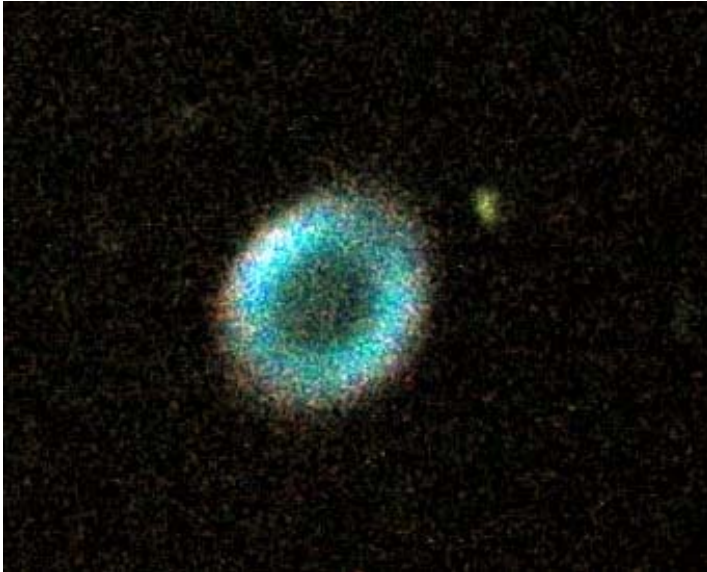
“Deep Sky Objects ”

- **Nebulae**
- **Star Clusters**
- **Galaxies**

The image shows the Crab Nebula (M1) as a central, multi-colored (green, blue, and red) diffuse cloud of gas and dust. It is surrounded by a vast field of stars of various colors and sizes against a black background. The nebula's structure is somewhat irregular and filamentary.

**M1 – “Crab” Nebula, 74 min
395 Ly, Supernova on 1054 AD**

2008



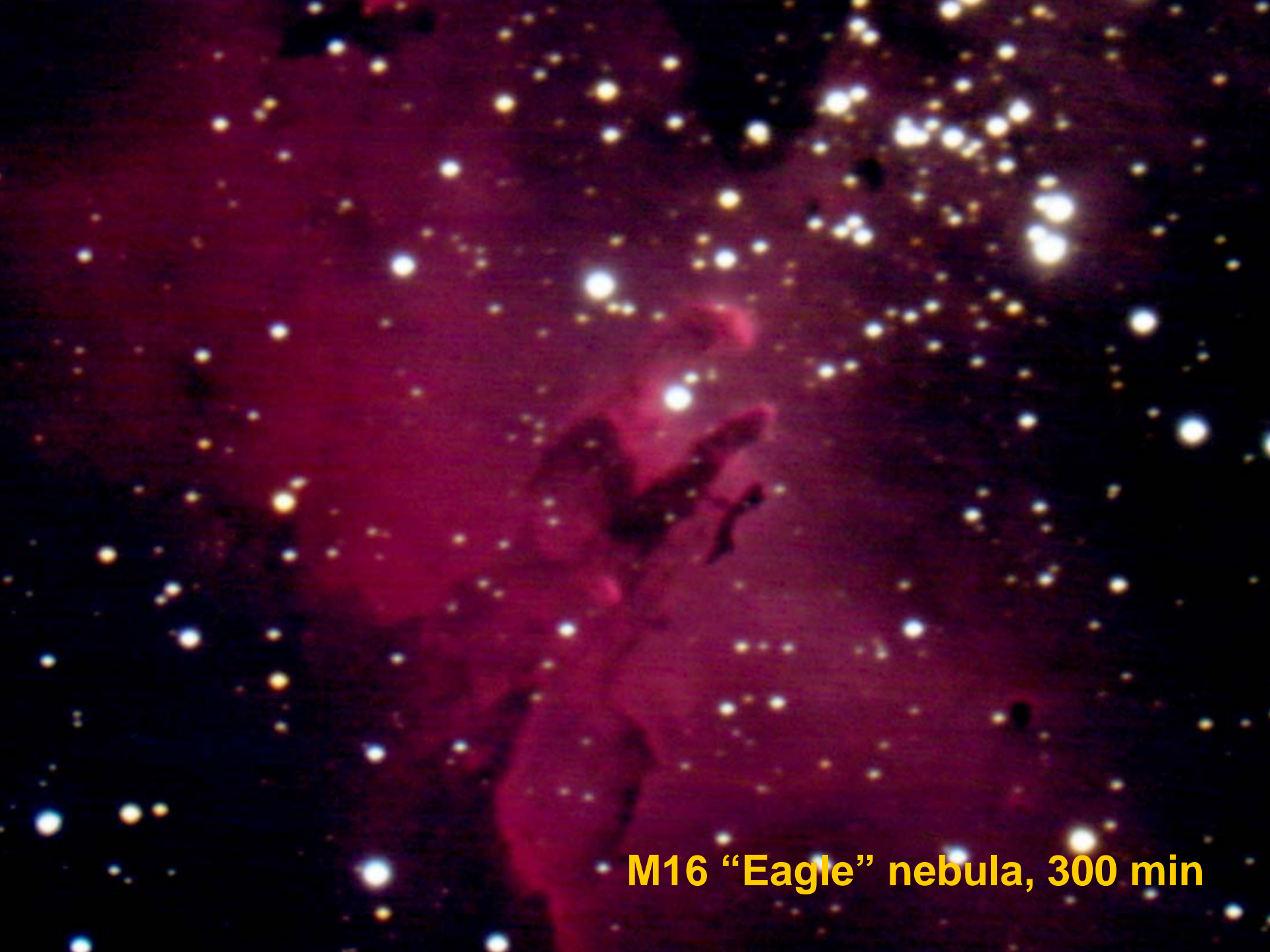
Recent



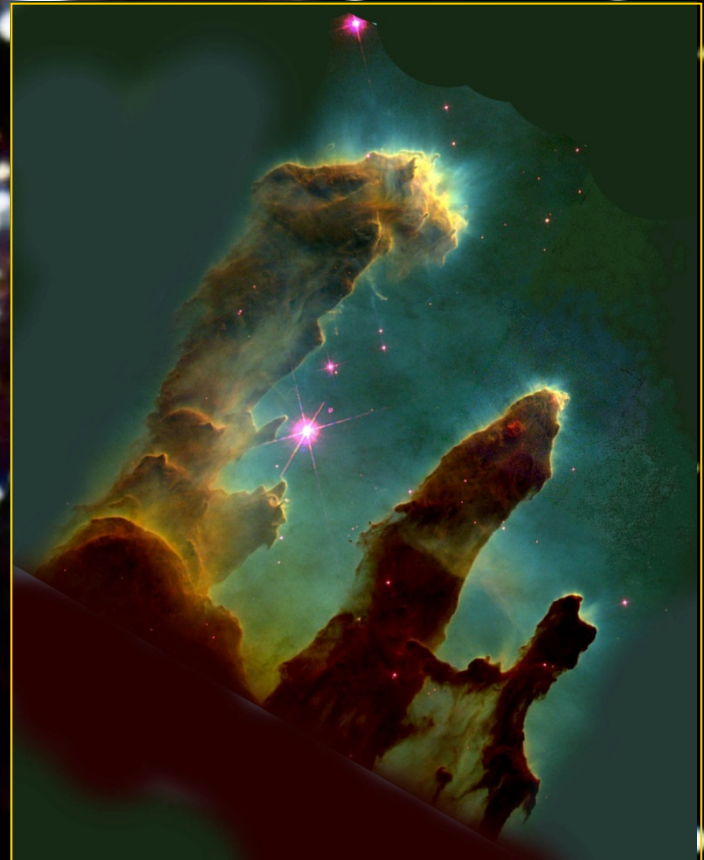
Ring Nebula M57, 14 min
1600 Ly



M27 “Dumbbell” nebula
1000 Ly



M16 "Eagle" nebula, 300 min



**NASA's "Pillars of Creation"
In the Eagle Nebula**



**M42 "Orion" nebula, 65 min
1600Ly**



**NGC 7000, “North American Nebula”
Williams (6/27/14)**



**NGC 2024, "Horse-head" Nebula 125 min,
Williams (12/26/11)**



NGC 6960, "Veil" Nebula 135 min, Williams (7/11/12)



M13 Globular Cluster
25,000 Ly

Hubble Classification of Galaxies

Ellipticals **E0**  **E6**  3-D ellipsoidal (25% of all galaxies)

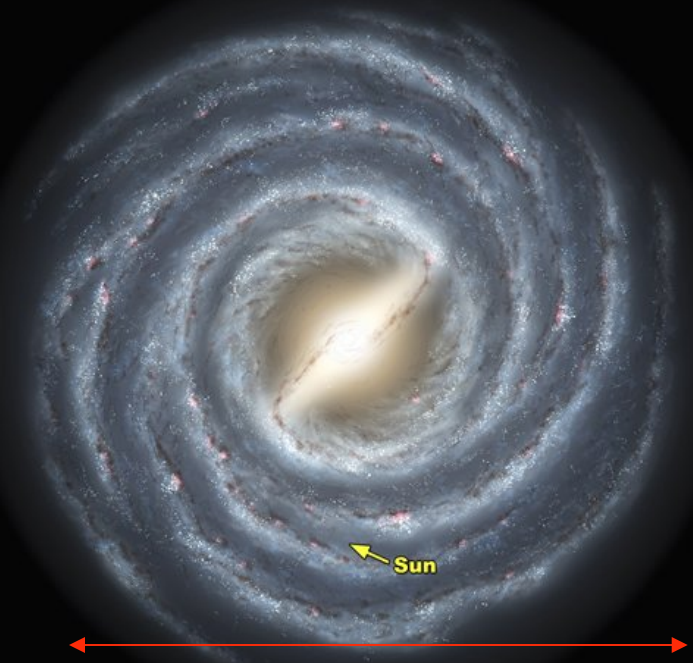
Spirals 75% of all galaxies (Sc = "Grand Design")

S0  **Sa**  **Sb**  **Sc** 

Barred Spirals (at least 50% of all spirals)

SB0  **SBa**  **SBb**  **SBc** 

Milky Way scaled against Andromeda galaxy, our nearest neighbor galaxy



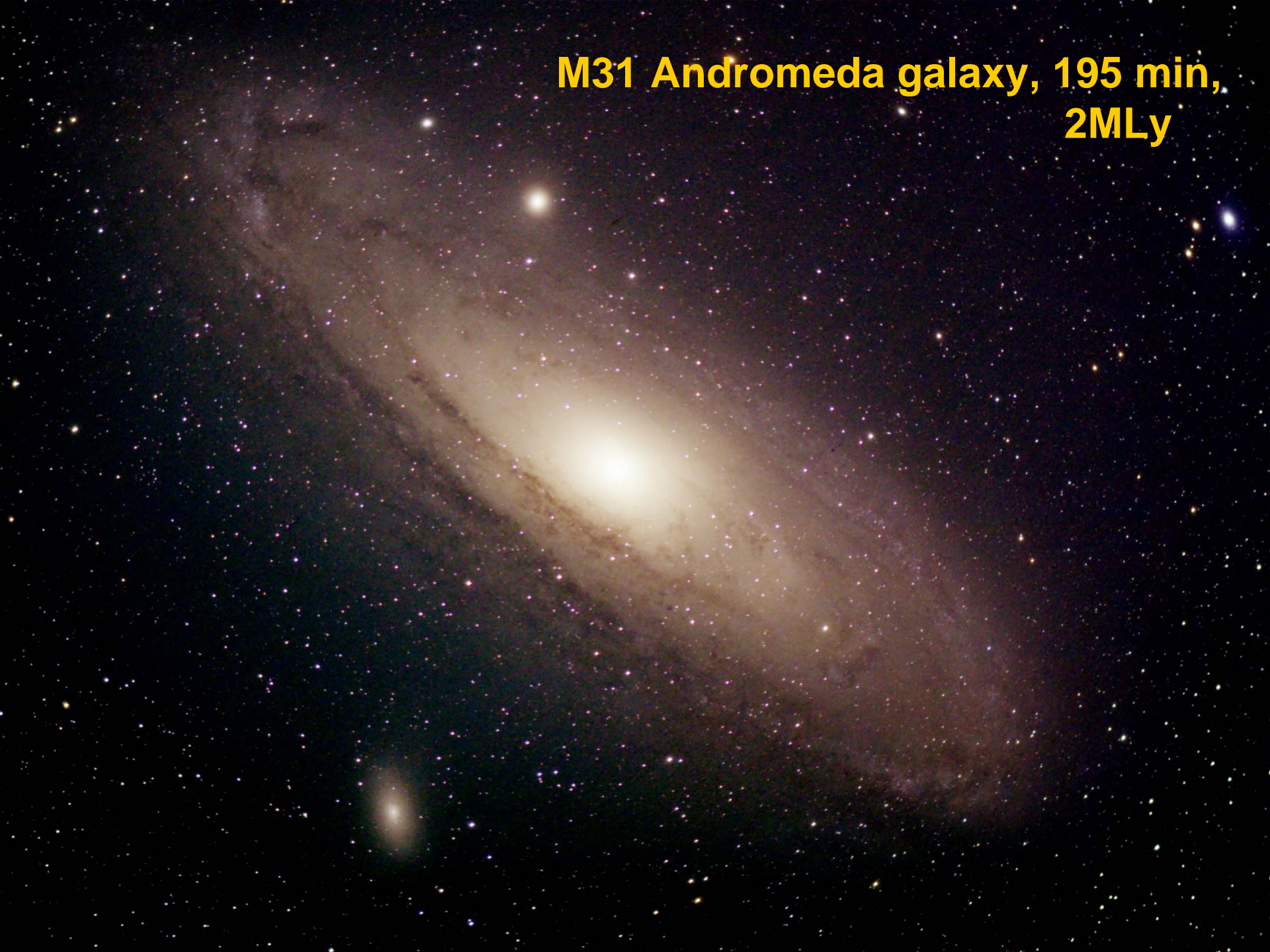
**Milky Way
100,000 light years**



2,000,000 light years



**M31 Andromeda galaxy, 195 min,
2MLy**





**M87, 85 min, 4 Billion solar mass central black hole
54 Mly**



**M104 “Sombrero” galaxy, 5 hr
50MLy**

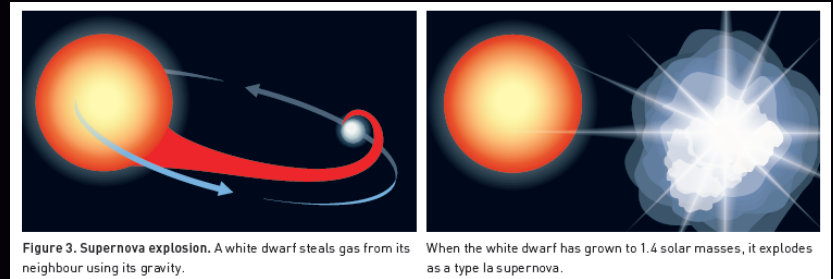


M51 “Whirlpool” galaxy, 155 min, 37MLy

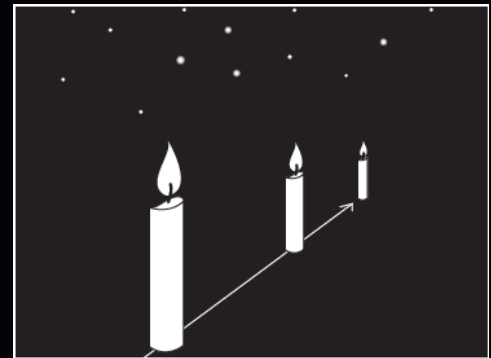



NGC 6946, 230 min
18 Mly (9/16/12)

Type 1a SUPERNOVA



A “Standard Candle” to
measure the expanding
universe”





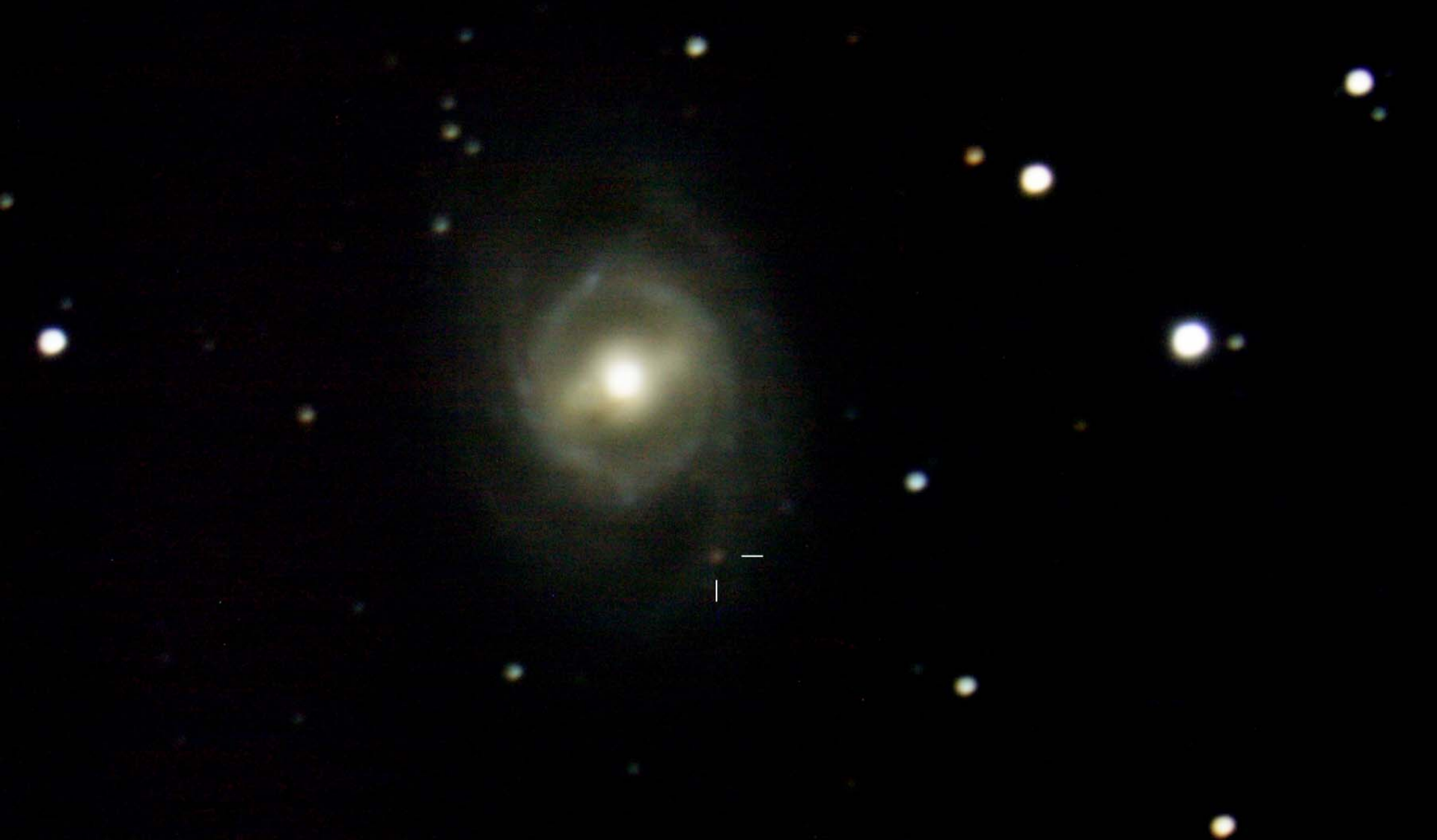
M101, “Pinwheel”
(4/20/10)
22 Mly, 120min



M101 (9/18/11)
SN 2011 fe



M95 (3/21/12)
SN 2012 aw



M95 (3/5/13)
SN 2012 aw

**M109 Barred Spiral galaxy, 84 min
55MLy**





**M1300 Barred galaxy, 180 min
63MLy**

Barred Spiral Galaxy NGC 1300



Hubble
Heritage

NGC 891 “Edge-on” galaxy, 90 min, 30Mly





**NGC 5746 “Edge-on” galaxy, 160 min
31 Mly; (5/9/11)**



**NGC 4565 “Edge-on” galaxy, 130 min
31 MLy**



Venus Transit of the Sun June 5, 2012

photographs by Dr. Harry Ringermacher
taken from the Beretz Observatory,
Delanson, New York

6:40 pm June 5, 2012



7:06 pm June 5, 2012



8:04 pm June 5, 2012





**Total Lunar Eclipse
“Blood Super- Moon”, Sept 27, 2015**

**photographs by Dr. Harry Ringermacher
taken from the Beretz Observatory,
Delanson, New York**

“Blood Super-Moon” at Totality

10:30 PM, EDT 9/27/2015

