



Howard Astronomical League Monthly Meeting

September 21st, 2023

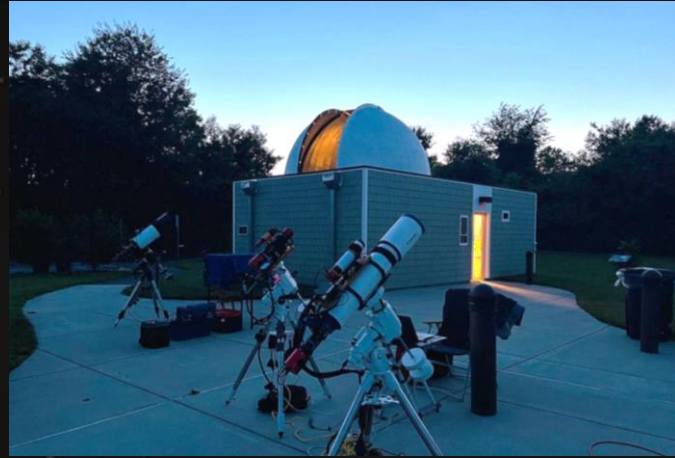
Tonight's Agenda, September 21st , 2023

- ⇒• Introductions
- Announcements
 - Star Parties & Outreach
 - Book of the month – **Krystal Rolon**
- Featured speaker – **Alyssa Pagan, Space Telescope Science Institute**
- What's Out in the Sky This Month...
 - Solar – **Phil Whitebloom**
 - Shallow Sky – **Jim Tomney**
 - Space-Based Astronomy – **Wayne Baggett**
- Members' Astro-Images and Sketches
- Wrap-up & Discussion

August Star Parties...

HAL's 2023 Scheduled Star Parties

Month	Date	Invitees
March	18	Members
March	25	Public
April	15	Members
April	22	Public
May	20	Members
May	27	Public
June	17	Members
June	24	Public
July	15	Members
July	22	Public
August	12	Members
August	26	Public
September	9	Members
September	23	Public
October	14	Members
October	21	Public
November	04	Members
November	11	Public



Note about Impromptu Star Parties & "Remote" Impromptu Star Parties

Don't forget to keep an eye out for impromptu events as we are due for some good weather

Note: if you're not already on the impromptu mailing list and would like to join there are instructions on the howardastro.org

[Impromptu Mailing List \(howardastro.org\)](https://howardastro.org)

(you can find a link to this page from the website home page under the "Hal Info" dropdown menu)

Book of the Month

Title:

- Under Alien Skies: A Sightseer's Guide to the Universe

Author:

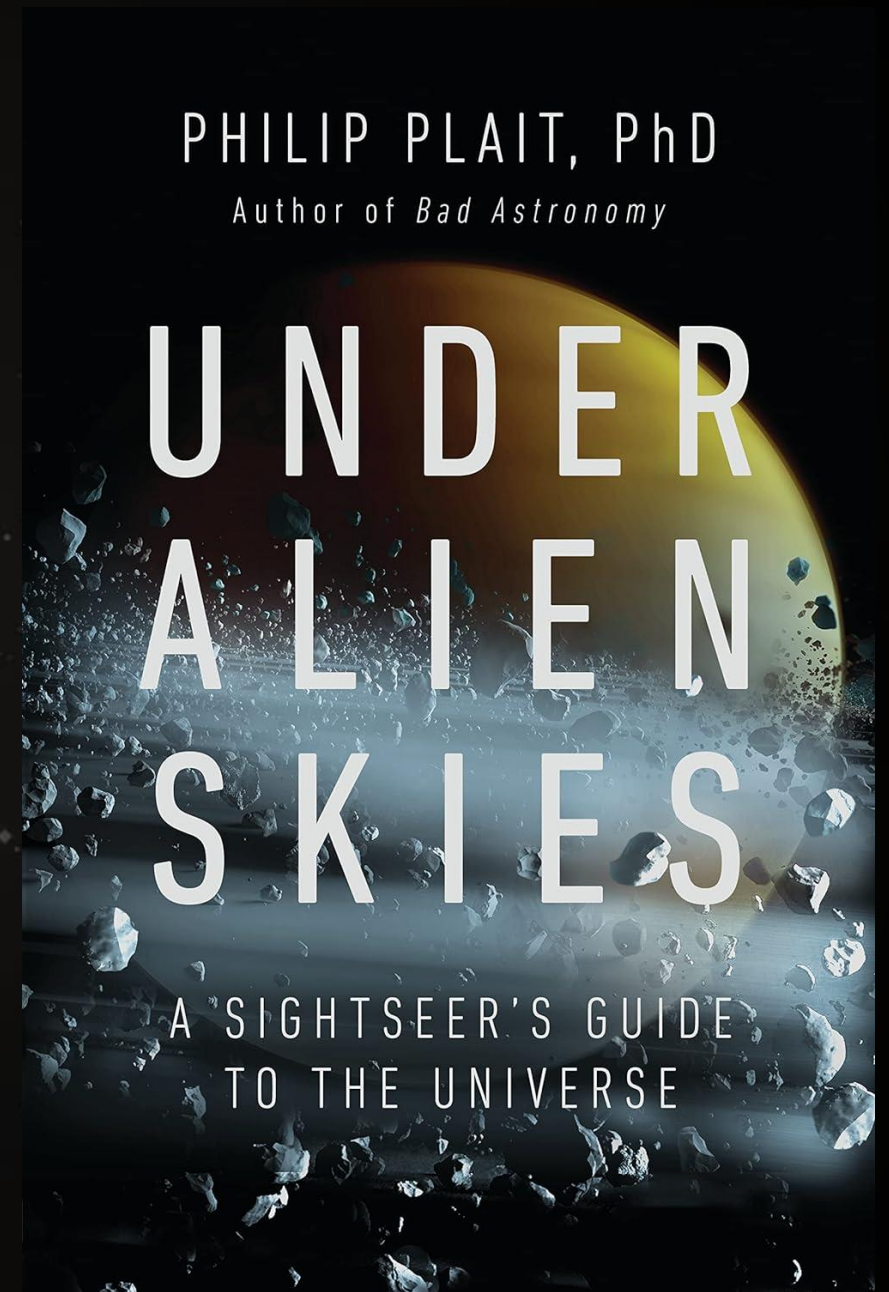
- Philip Plait, Ph.D.

Length:

- 336 pages

Audience Level:

- Beginner Friendly
- Intermediate
- Advance/Experienced



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Alyssa Pagan, Science Visuals Developer, Space Telescope Science Institute

The Art and Science of Visualizing Webb Imagery

Alyssa Pagan

- Alyssa Pagan is a Science Visuals Developer who works in the Office of Public Outreach within the Space Telescope Science Institute. Using her background in Art and Science, she works closely with astronomers to create color images of space that are intended both to educate, inspire and showcase the beauty of our Universe.

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THE SPECTROHELIOGRAPH AND THE SPECTROHELISCOPE

PEDRO RE
<http://www.astrosurf.com/re>

The spectroheliograph was invented independently by George Ellery Hale (1868-1938) (Figure 1) and Henri-Alexandre Deslandres (1853-1948) (Figure 2) in 1890/1891. Robert Raynolds McMath /1891-1962) extended its functionality (1932) in order to take motions pictures of the Sun. G.H. Hale also invented the spectrohelioscope in 1924-1929.



Figure 1- George Ellery Hale (1868-1938).



Figure 2- Henri-Alexandre Deslandres (1853-1948) (left) and the Meudon Observatory Spectroheliograph (right).

The principle of both the spectrohelioscope and spectroheliograph was described for the first time by Jules Jansen (1824-1907). Jansen observed for the first time the spectra of solar

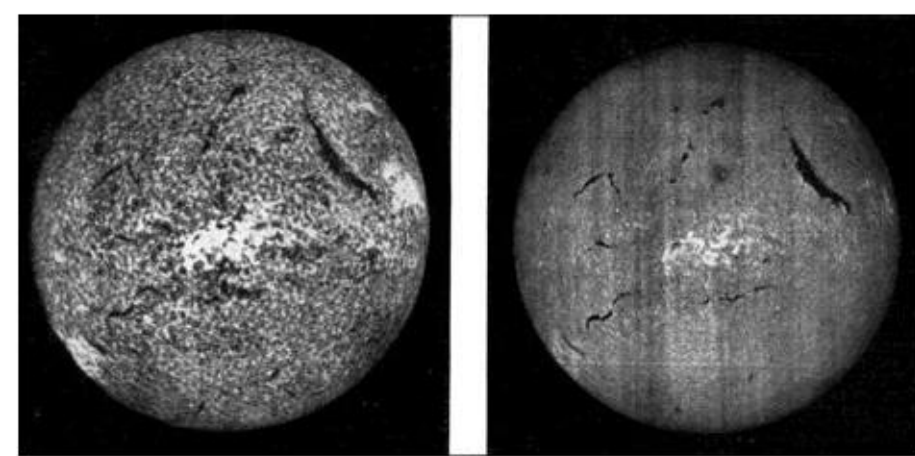


Figure 9- Spectroheliographs obtained at Meudon observatory: Calcium (left) and H-alpha (right). March, 21, 1910.

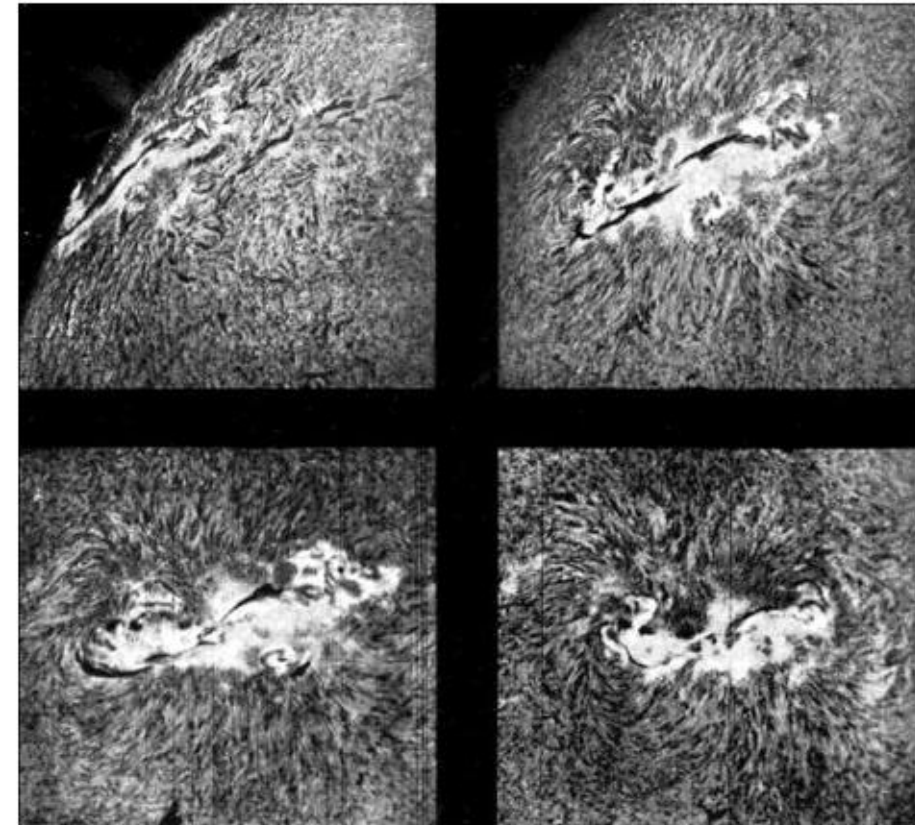
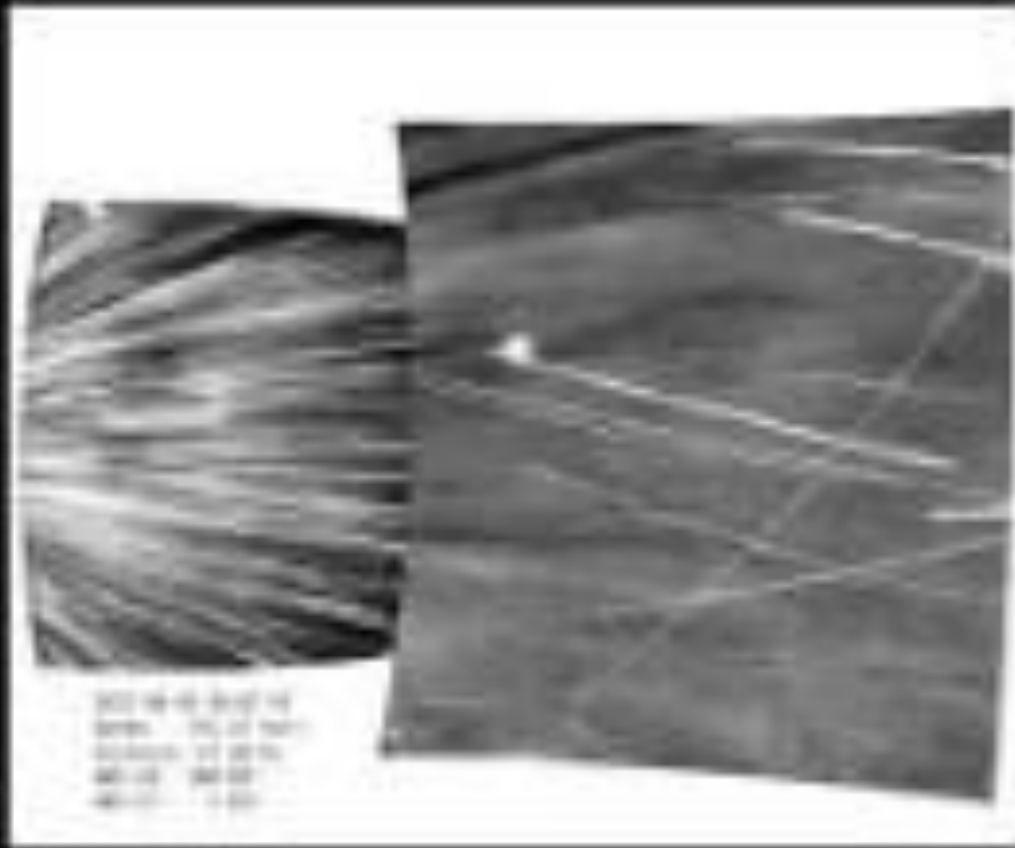


Figure 10- Spectroheliograph images (H-alpha). Mount Wilson observatory, August, 3, 5, 7 and 9, 1915.

Imaging our
 Sun in the
 early 20th
 century

Parker Observes Powerful Coronal Mass Ejection 'Vacuum Up' Interplanetary Dust



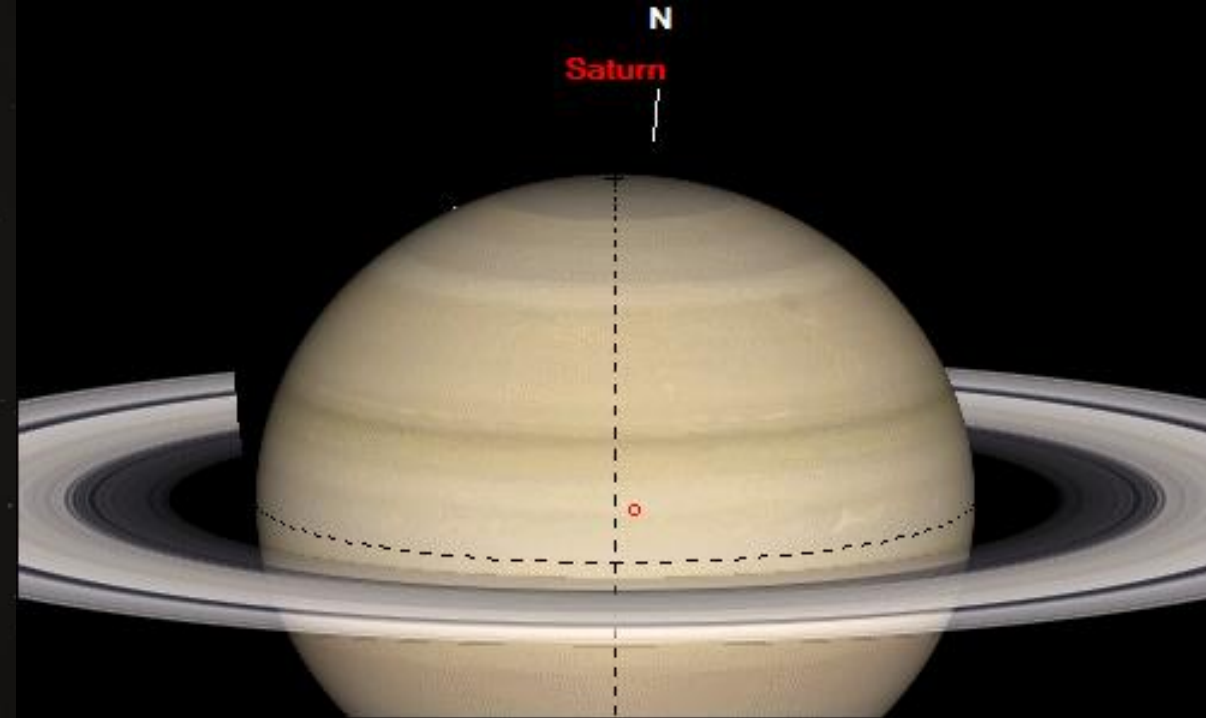
Parker Solar Probe's Wide Field of View Imager for Solar Probe (WISPR) camera observes as the spacecraft passes through a massive coronal mass ejection on Sept. 5, 2022. Coronal mass ejections are immense eruptions of plasma and energy from the Sun's corona that drive space weather. Credit: NASA/Johns Hopkins APL/Naval Research Lab

Shallow Sky Highlights for Sept-Oct 2023

- **Comet Nishimura** has rounded the Sun and diving south, not observable 😞
- **Mercury** reaches greatest western elongation tomorrow morning in its best morning apparition of the year – good opportunity to catch our smallest planet
- **Venus** high in pre-dawn sky, goes from 30% phase at 36” to 48% phase at 25”
- **Jupiter** now rising at 9pm, heading for Nov 2nd opposition. Good time to take in Galilean satellite events. https://skyandtelescope.org/wp-content/plugins/observing-tools/jupiter_moons/jupiter.html
- **Saturn** continues to be well placed for observation. The shadow of globe on rings has returned as well as the darker “Crepe” ring as it cuts across the globe.
- **Neptune** reached opposition Tuesday night at 8th magnitude. For a large scope visual challenge (or average scope imaging challenge), see if you can catch 13th magnitude Triton. <https://skyandtelescope.org/observing/interactive-sky-watching-tools/sky-telescopes-triton-tracker/#>

Tethys Eclipse Season!

- *As Saturn heads towards its equinox in 2025, the orbital planes of Saturn's moons will begin to intersect the planet*
- *Currently 10th magnitude Tethys is undergoing transits (crossing in front of the globe) and eclipses (emerging from the globe's shadow – see animation to right)*
- *Transits are too difficult to visually observe, but you can watch Tethys emerge from the globe's shadow on 4 occasions between now and our next meeting.*
 - *High power to increase separation between globe's glare and where Tethys reappears*

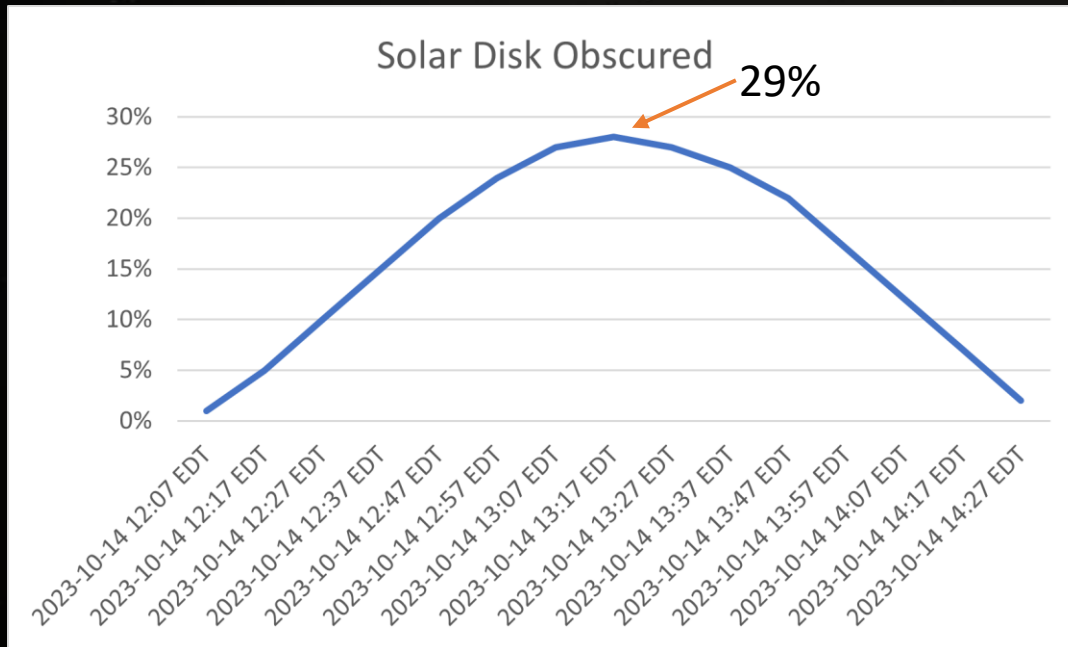
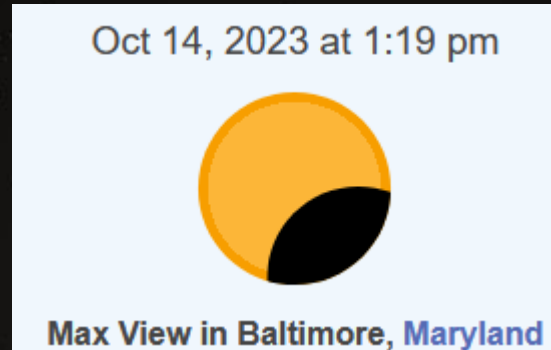


10/01/2023 11:00 PM
10/03/2023 08:17 PM
10/17/2023 01:18 AM
10/18/2023 10:36 PM

Annular Solar Eclipse – Saturday October 14th

Local Events (EDT)

- Starts: 12:01 pm
- Maximum: 1:19 pm
- Ends: 2:38 pm



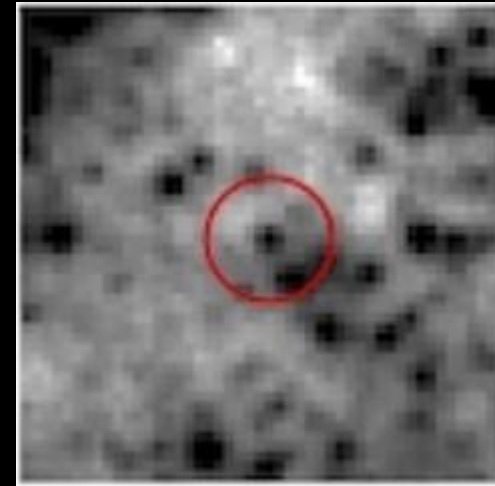
What's Up in Space: Update on "Hubble Tension"

- Two methods of measuring the Hubble Constant, H_0 :
 - Cosmic Microwave Background gives $H_0=67.4 (+/-0.5)$ km/s/Mpc
 - Cosmic Distance Ladder (Cepheids, SN Ia) gives $H_0=73.0 (+/- 1.0)$ km/sec/Mpc
- The difference is significant to more than 5σ (less than one chance in 3.5 million that the values are the same)
- Two possible reasons for the difference:
 - Observed Cepheid brightnesses are too bright
 - Issues with our cosmological model
- Nobel laureate Adam Riess (STScI and Johns Hopkins U.) and colleagues investigated the Cepheid calibration question

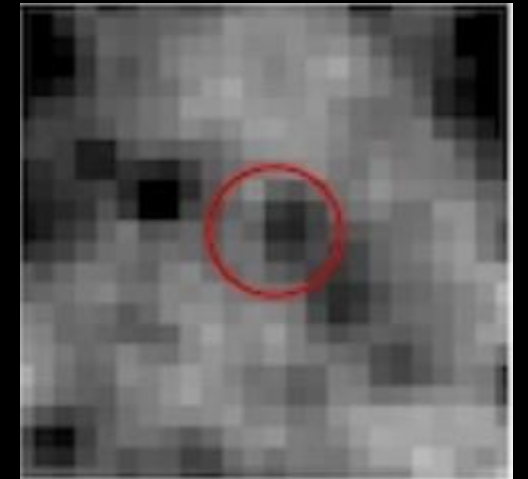
What's Up in Space: Update on "Hubble Tension"

- Cepheids are identified by HST observations in visible light (their amplitude is large), but IR observations are used to determine their brightness (less influence from dust)
- Crowding in the extragalactic Cepheid FOVs is a problem for HST in the IR
 - Estimates of contamination have to be applied to the brightness measurements → increased uncertainty
- JWST has full resolution in the near-IR, so corrections are easier or even absent

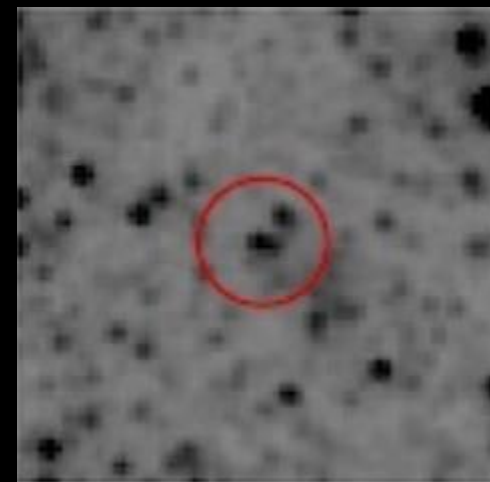
NGC 5584



HST 0.55 μ m



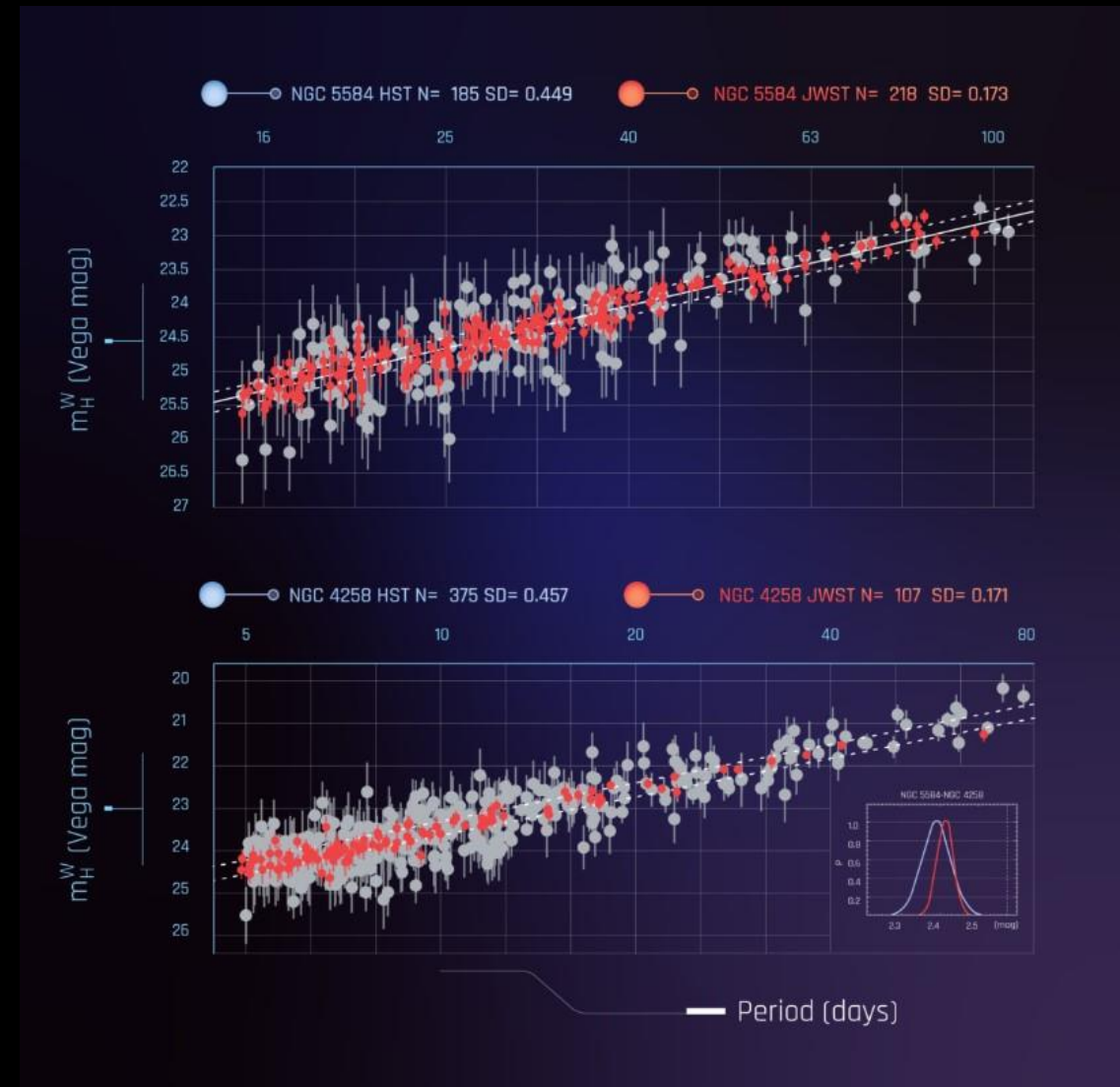
HST 1.6 μ m



JWST 1.5 μ m

What's Up in Space: Update on "Hubble Tension"

- Riess, et al., looked at two galaxies (NGC 5584 and NGC 4258) to compare JWST's IR period-luminosity relations with previous HST results
 - HST's results were confirmed with much smaller uncertainties
- This confirmation makes it unlikely that HST's results are in error and contributing to the Hubble Tension
 - It suggests that the cosmological models used in the CMB determination need to be looked at for the origin of the effect

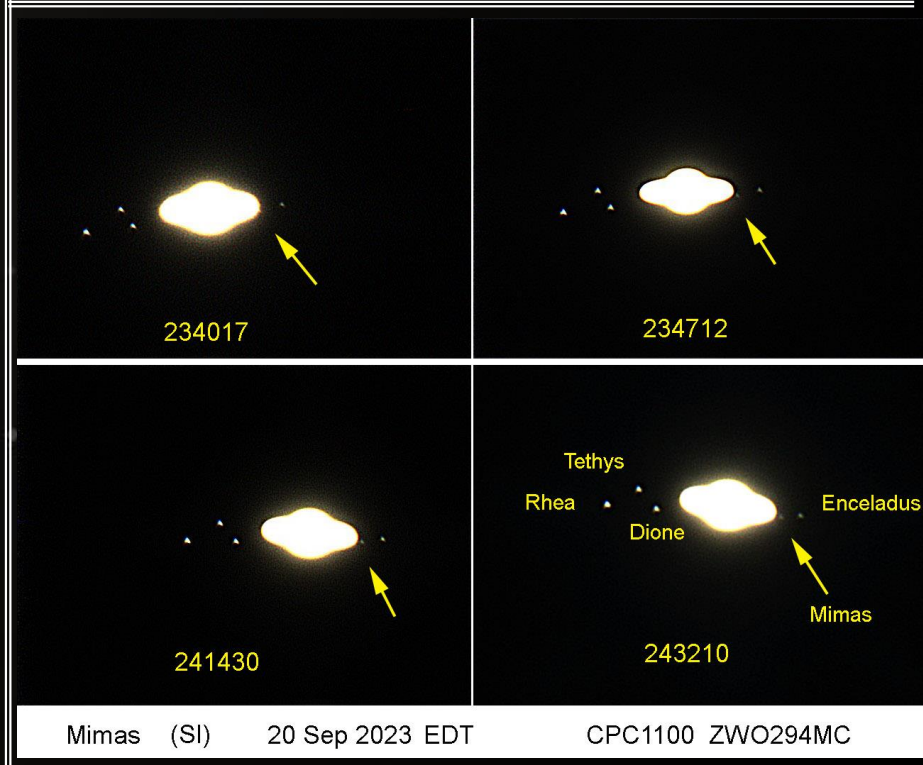
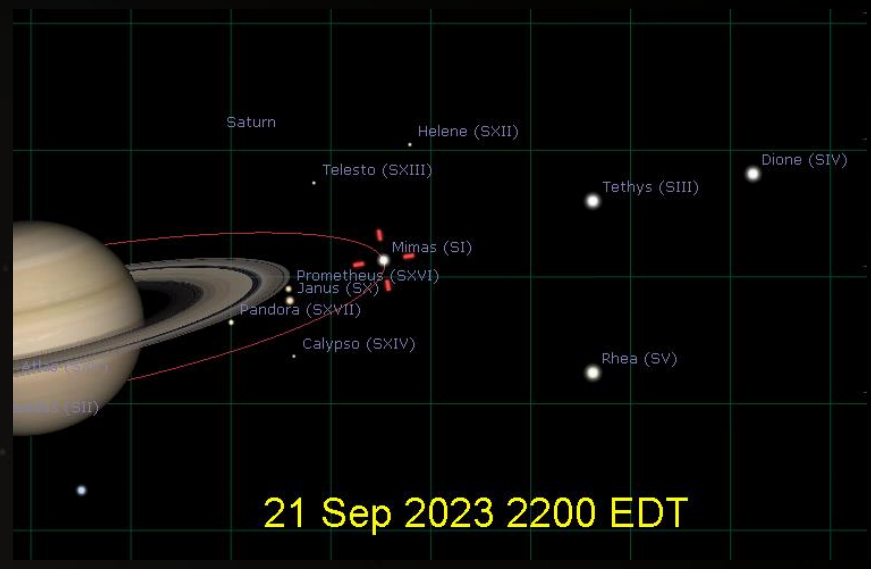


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Artemas, PA
Samsung Galaxy A42
ISO3200 8sec
15 Sep 2023



Steven Gauss



Daniel Lohin



This is LBN 477 Taken during Black forest Star party 9/15-9/17 @
Cherry Springs State Park 22 hours of integration between my
Dual imaging scope over two nights. OSC (100s) L (300s)

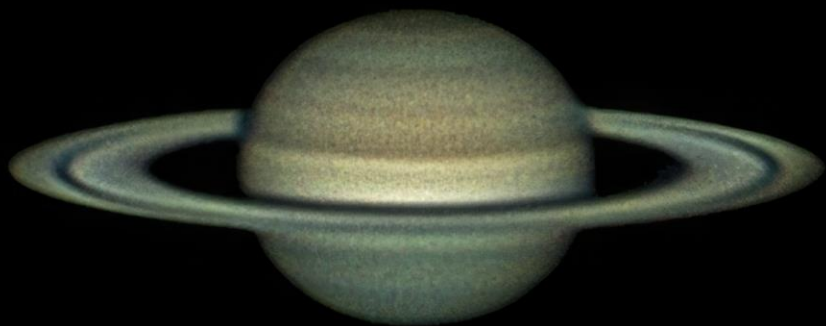
Thorne Ransom



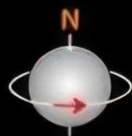
Travis Totten



Saturn 2023-09-07 03:52.3 UT
CMI=108° CMII=323° CMIII=265°
Seeing: 8/10 Trans: 6/10



25cm Newtonian f16, 2.5x TV Barlow
WL with UVIR cut, ADC
ASI178MC at 77 fps
3x2 min Derotated



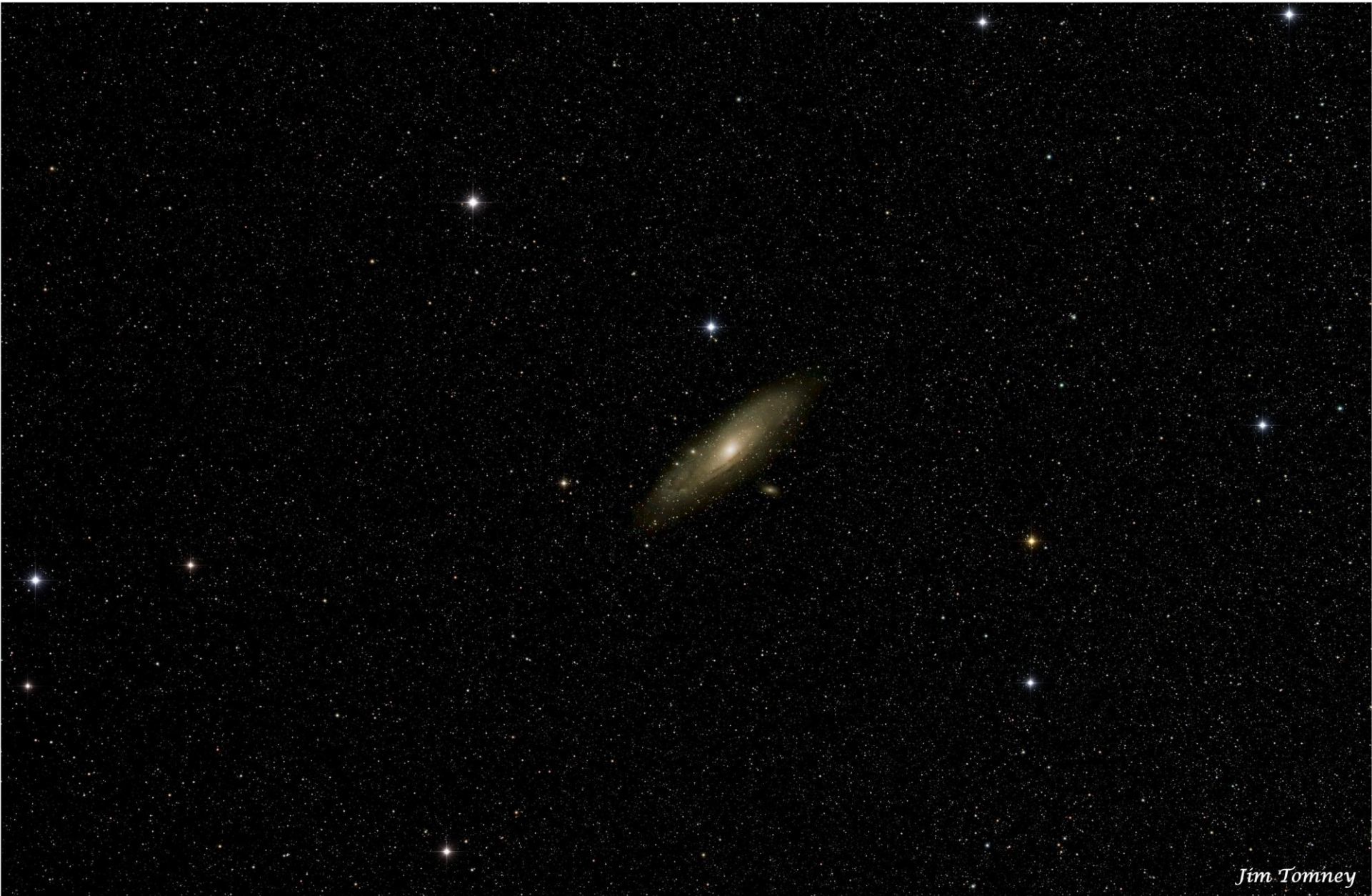
Jupiter 2023-09-06 06:11.6 UT
CMI=164° CMII=30° CMIII=52°
Seeing: 9/10 Trans: 7/10



25cm Newtonian f16, 2.5x TV Barlow
WL with UVIR cut, ADC
ASI178MC at 66 fps
4x1 min Derotated

Jim Tomney
Towson, MD US

Jim Tomney

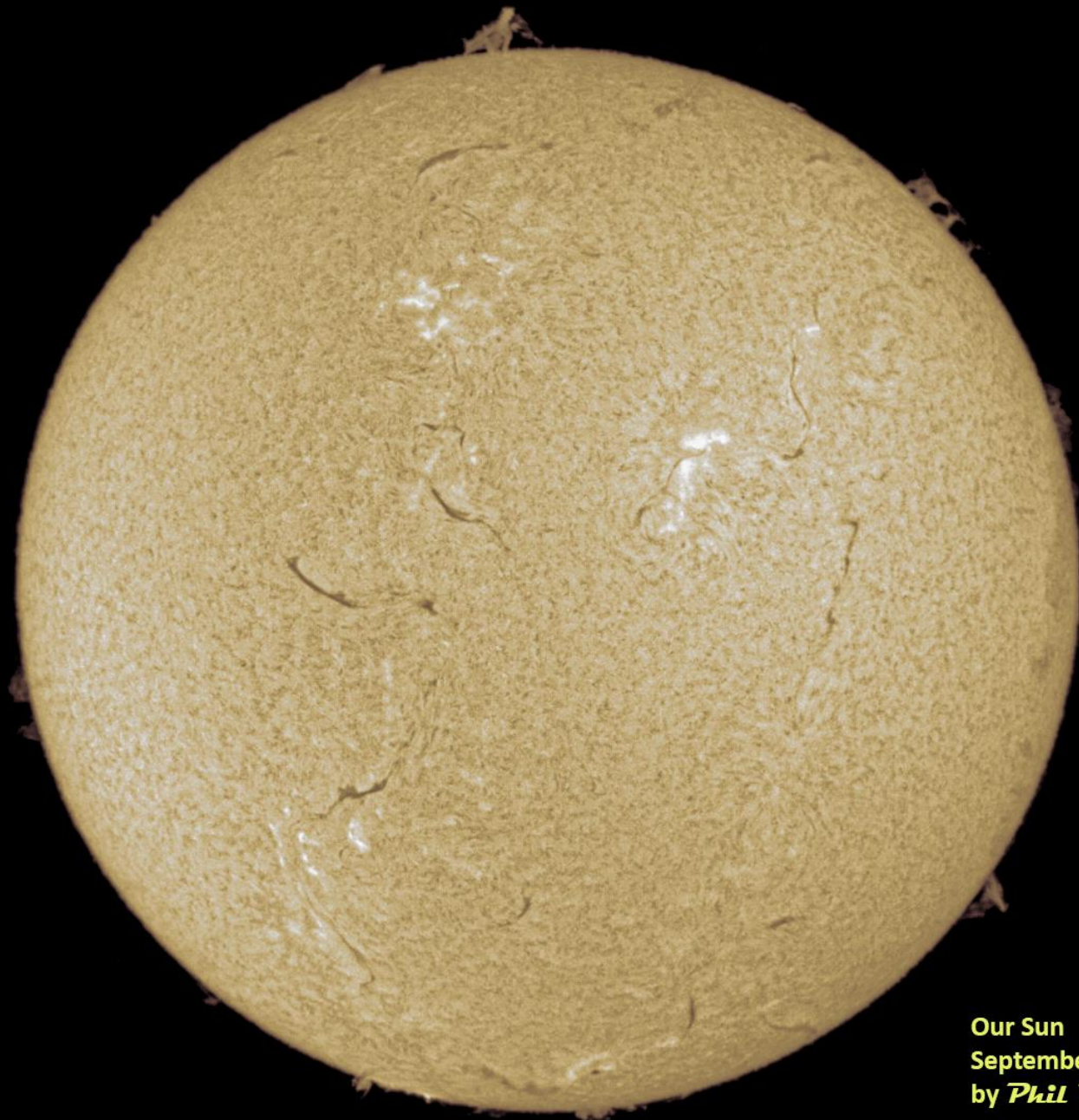


Canon 6ti 70mm ISO 1600
65 x 1 minute exposures
Bortle 3 skies

Andromeda Galaxy

Jim Tomney

Jackson River Ridge
Monterey, VA
Aug 12, 2023



Our Sun
September 09, 2023
by *Phil Whitebloom*





NGC 6946
August 18, 2023
Alpha Ridge Park

8-inch F/8 RC
LRGB (35,12,11,12)x4min
4hr40min Total Exp.

ASI1600MM-C
Gain 0 (5e/ADU)
Wayne Baggett

Wayne Baggett



Elephant Trunk Nebula 8-inch F/8 RC ASI1600MM-C
September (5,14,15), 2023 LHa (10,81)x4min Gain 139 (1e/ADU)
Alpha Ridge Park 6hr4m Total Exp. Wayne Baggett

Wayne Baggett





Jared Case



Jared Case