



# Howard Astronomical League Monthly Meeting

April 20, 2023

# Tonight's Agenda, April 20, 2023

- ⇒• Introductions
- Announcements
  - Star Parties
  - Astro-school Update(/s) – **Phil Whitebloom**
  - Book of the month – **Krystal Rolon**
- Featured speaker has had an unavoidable conflict, will be joining us next month
  - **Glen Nagle, Science Communicator, Canberra Deep Space Communication Complex**
- 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

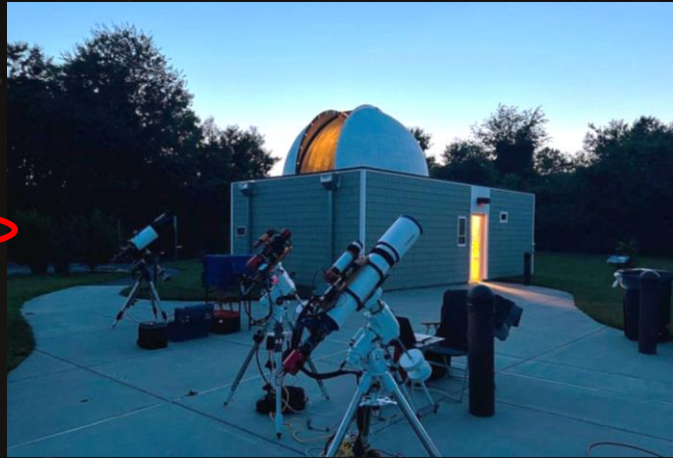
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# Star Parties...

## 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



## Regional 2023 Star Parties

Name	Location	Typical Date
<a href="#">Northeast Astronomy Forum</a>	<a href="#">Suffern, NY</a>	April
<a href="#">Texas Star Party</a>	<a href="#">Fort Davis, TX</a>	May
<a href="#">Michiana Star Party</a>	<a href="#">Vandalia, MI</a>	May
<a href="#">Bootleg Spring Star Party</a>	<a href="#">Harmon, IL</a>	June
<a href="#">Bryce Canyon Astronomy Festival</a>	<a href="#">Bryce Canyon National Park, UT</a>	June
<a href="#">Cherry Springs Star Party</a>	<a href="#">Coudersport, PA</a>	June
<a href="#">Grand Canyon Star Party</a>	<a href="#">Grand Canyon, AZ</a>	June
<a href="#">Rocky Mountain Star Stare</a>	<a href="#">Gardner, CO</a>	June
<a href="#">Wisconsin Observers Weekend</a>	<a href="#">Hartman Creek State Park, WI</a>	June
<a href="#">Gateway to the Universe Star Party</a>	<a href="#">Marten River Provincial Park, ON</a>	July
<a href="#">York County Star Party</a>	<a href="#">York, PA</a>	July
<a href="#">Maine Astronomy Retreat</a>	<a href="#">Washington, ME</a>	July/Aug
<a href="#">Stellafane Convention</a>	<a href="#">Springfield, VT</a>	Aug
<a href="#">Almost Heaven Star Party</a>	<a href="#">Spruce Knob, WV</a>	Aug
<a href="#">Acadia Night Sky Festival</a>	<a href="#">Bar Harbor, ME</a>	Sept
<a href="#">Black Forest Star Party</a>	<a href="#">Coudersport, PA</a>	Sept
<a href="#">AstroAssembly</a>	<a href="#">North Scituate, RI</a>	Sept
<a href="#">Hidden Hollow Star Party</a>	<a href="#">Mansfield, OH</a>	Sept
<a href="#">Enchanted Skies Star Party</a>	<a href="#">Socorro, NM</a>	Oct
<a href="#">NOVAC Stargaze</a>	<a href="#">C. M. Crockett Park, VA</a>	Oct

Astro School



# A Place in Our Galaxy Where You Choose the Topics\*

\* Email [Philwhitebloom@yahoo.com](mailto:Philwhitebloom@yahoo.com) with suggestions

## Our Campus Locations



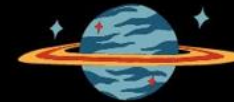
HALO



Robinson Nature Center

## PLANETARIUM SHOW AT ROBINSON NATURE CENTER

Come enjoy the wonders of outer space under the dome at Robinson Nature Center.



HAL members only, \$8 per person (ages 7+)

April 13th, 6:45 - 8:30pm

Call 410-313-0400 to register, must pay ahead of time

# Book of the Month

Title:

- Bad Astronomy: Misconceptions and Misuses Revealed from Astrology to the Moon Landing “Hoax”

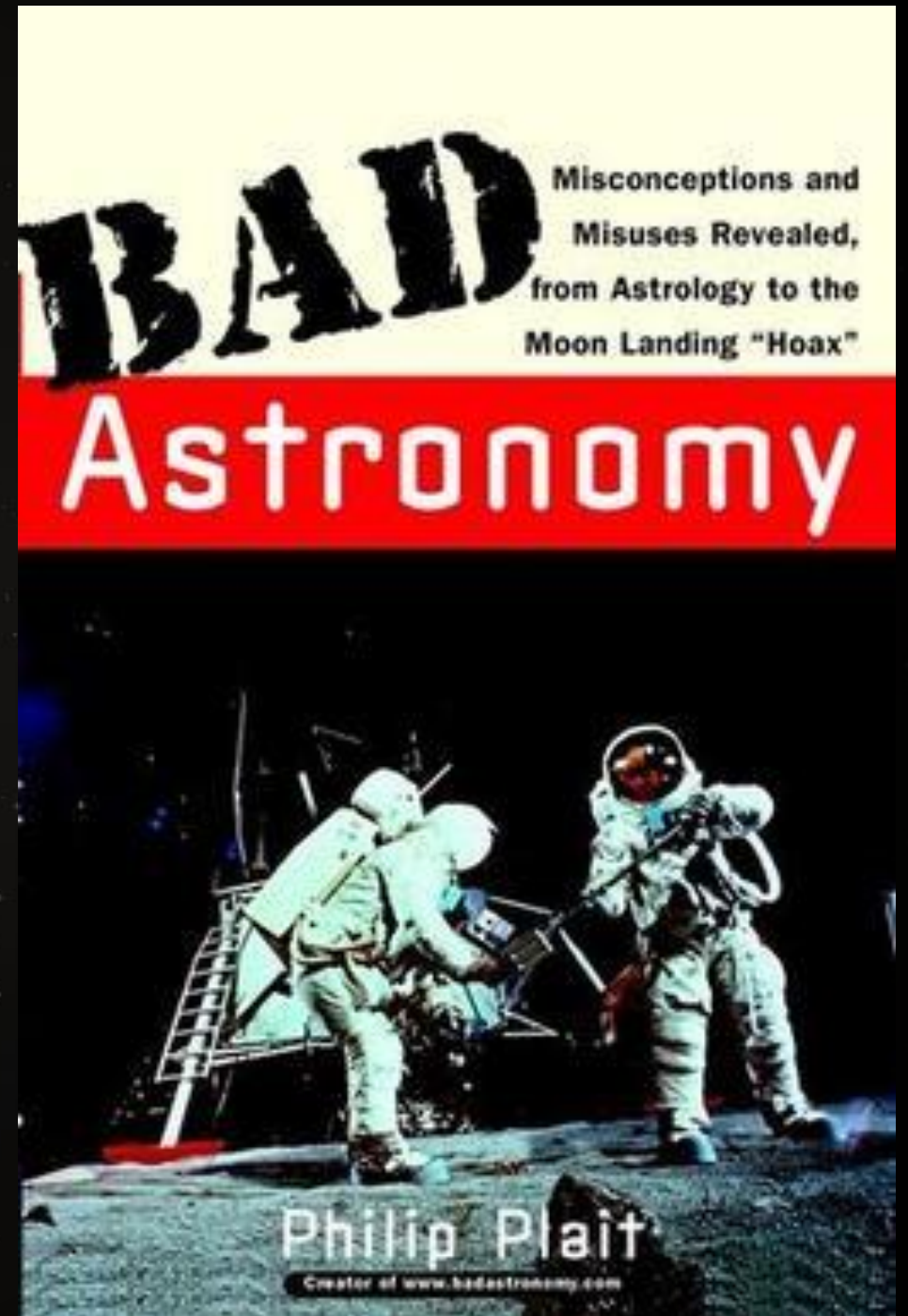
Author:

- Philip Plait

Length: 259 pages

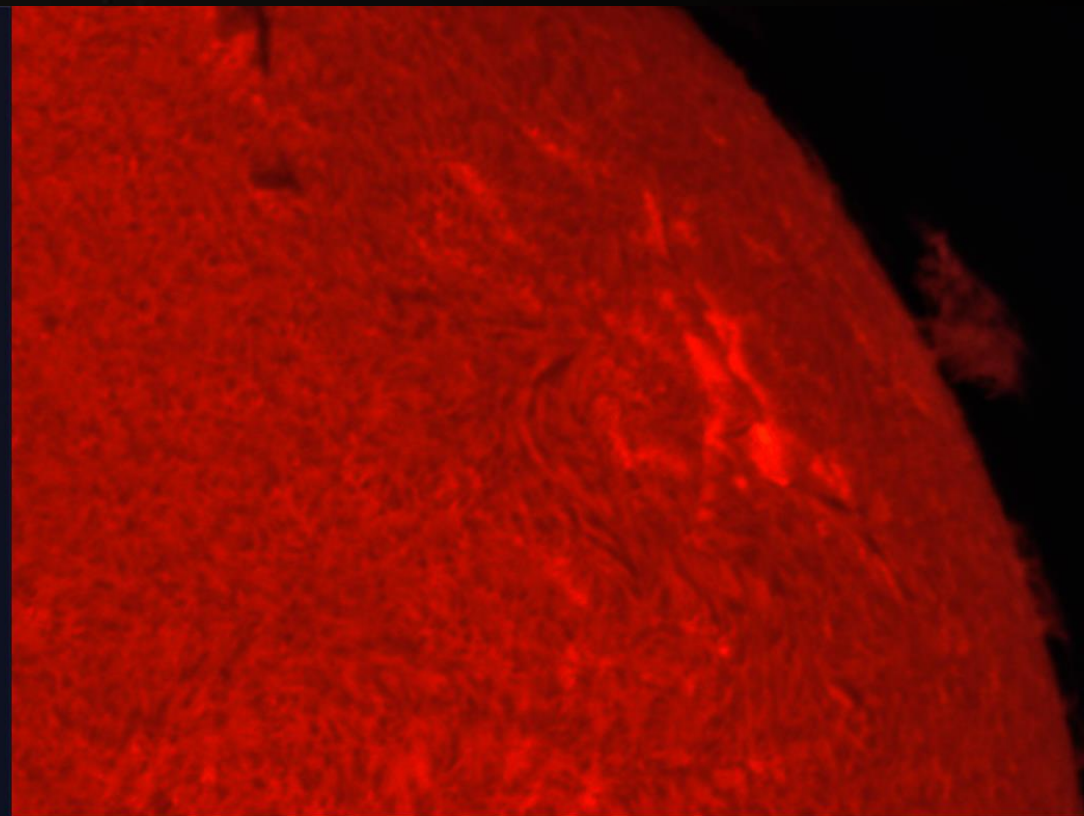
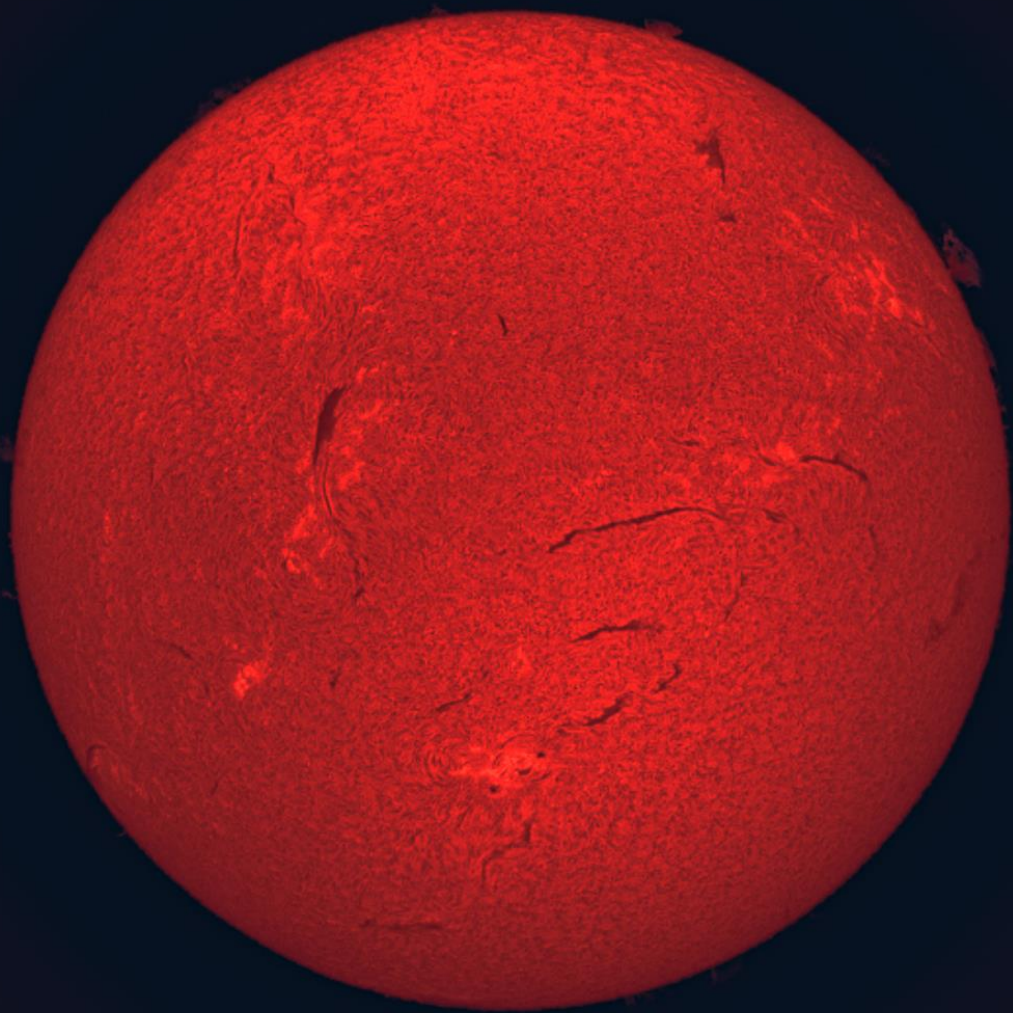
Audience Level:

- Beginner Friendly
- Intermediate
- Advance/Experienced



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**Our Sun**

**April 4, 2023**

**by *Phil Whitebloom***

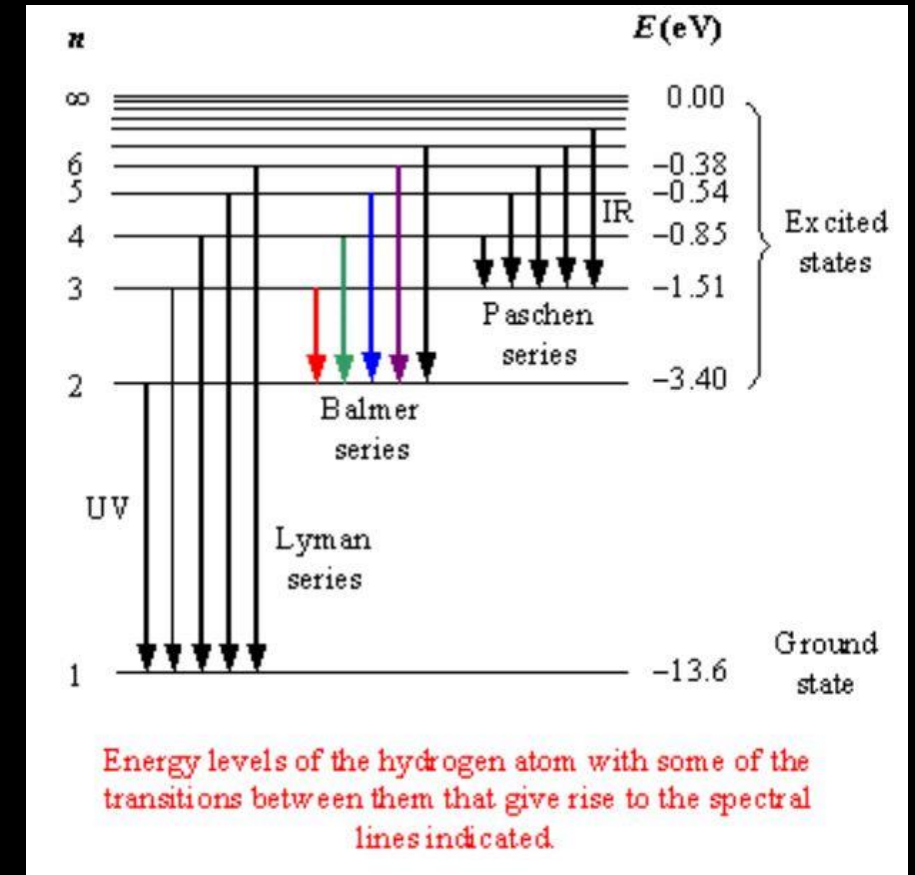
# Shallow Sky Highlights for Apr-May 2023

- Venus: Prime observing conditions for us – high in the sky at sunset
  - Phase goes from 70% to 55% - great time to look for “Cusp Caps”
    - Knock the glare down (e.g. a Moon filter or similar)
    - Violet Wratten #47 may improve ability to see subtle cloud features
- Mars: In the ~5” size range (e.g., Mercury) but still well placed, imaging still worthwhile albeit challenging
- Saturn: Has returned to the pre-dawn skies to start its 2023-2024 apparition where the rings will continue to close up ( $10^\circ \Rightarrow 6^\circ$ )
- Lyrid Meteor Shower peaks April 22<sup>nd</sup> – known for occasional fireballs

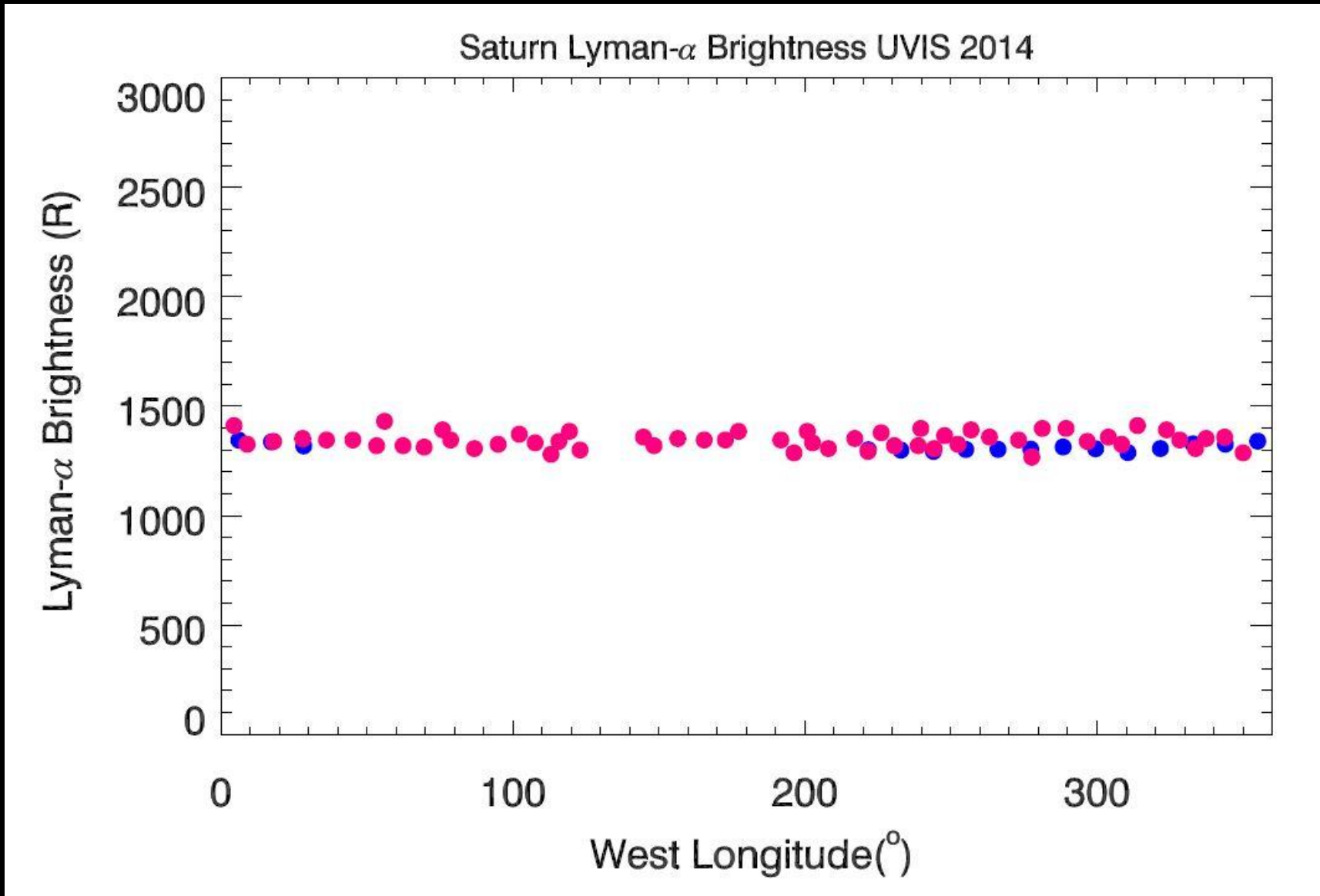


# What's Up in Space: Saturn's Rings Enrich Atmosphere

- From Ben-Jaffel, et al., Feb 2023: *The Enigmatic Abundance of Atomic Hydrogen in Saturn's Upper Atmosphere* (The Planetary Science Journal, 4:54, 2023 March; <https://doi.org/10.3847/PSJ/acaf78>)
- Observations from HST, Cassini, IUE, Voyager 1 and 2
  - HST/STIS and Cassini UVIS observed simultaneously in Aug and Sept 2017
  - STIS-Cassini cross-calibration allowed the use of the earlier IUE & Voyager data
  - The Ly $\alpha$  emission in Saturn's atmosphere is independent of longitude, ruling out auroras as the source



# What's Up in Space: Saturn's Rings Enrich Atmosphere

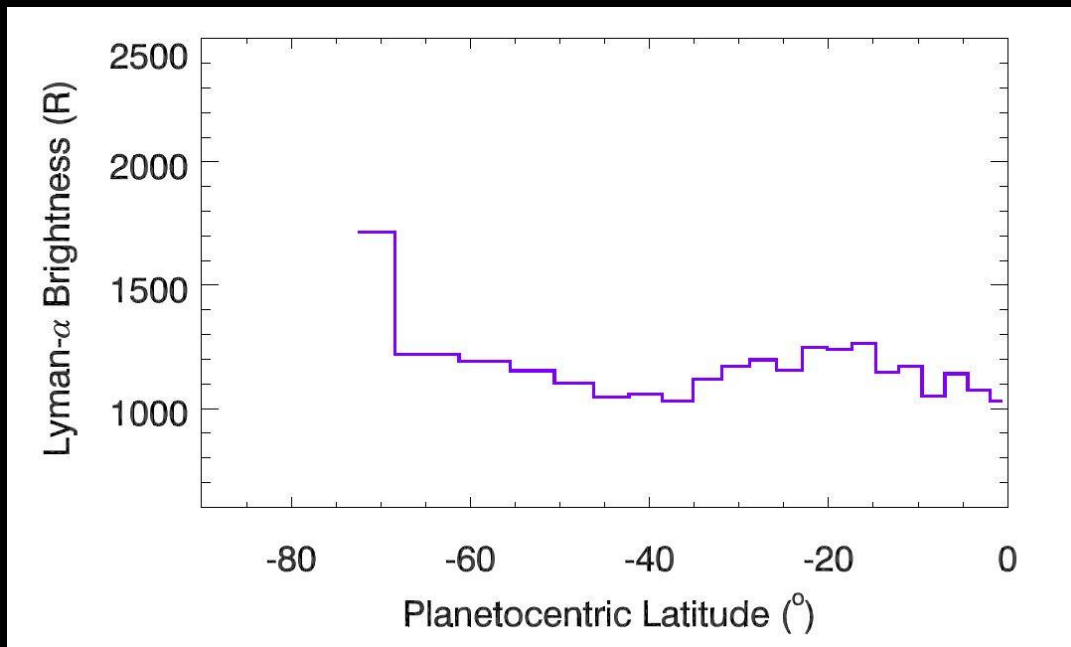


Blue: Cassini UVIS 2014 April 5  
Red: Voyager 2 UVS 1980

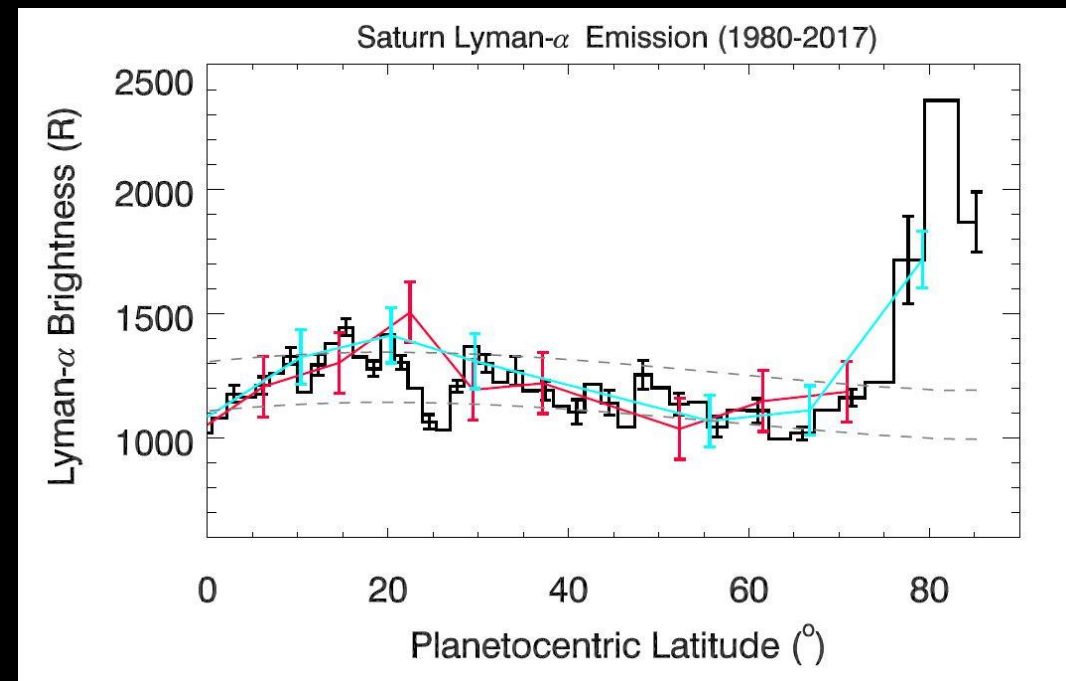
# What's Up in Space: Saturn's Rings Enrich Atmosphere

- *Permanent* (all observations show it!) excess Ly $\alpha$  emission at latitudes of 5° – 35°N relative to the emission at the equator and 60°N
- Southern hemisphere shows less variation with latitude

Southern Hemisphere



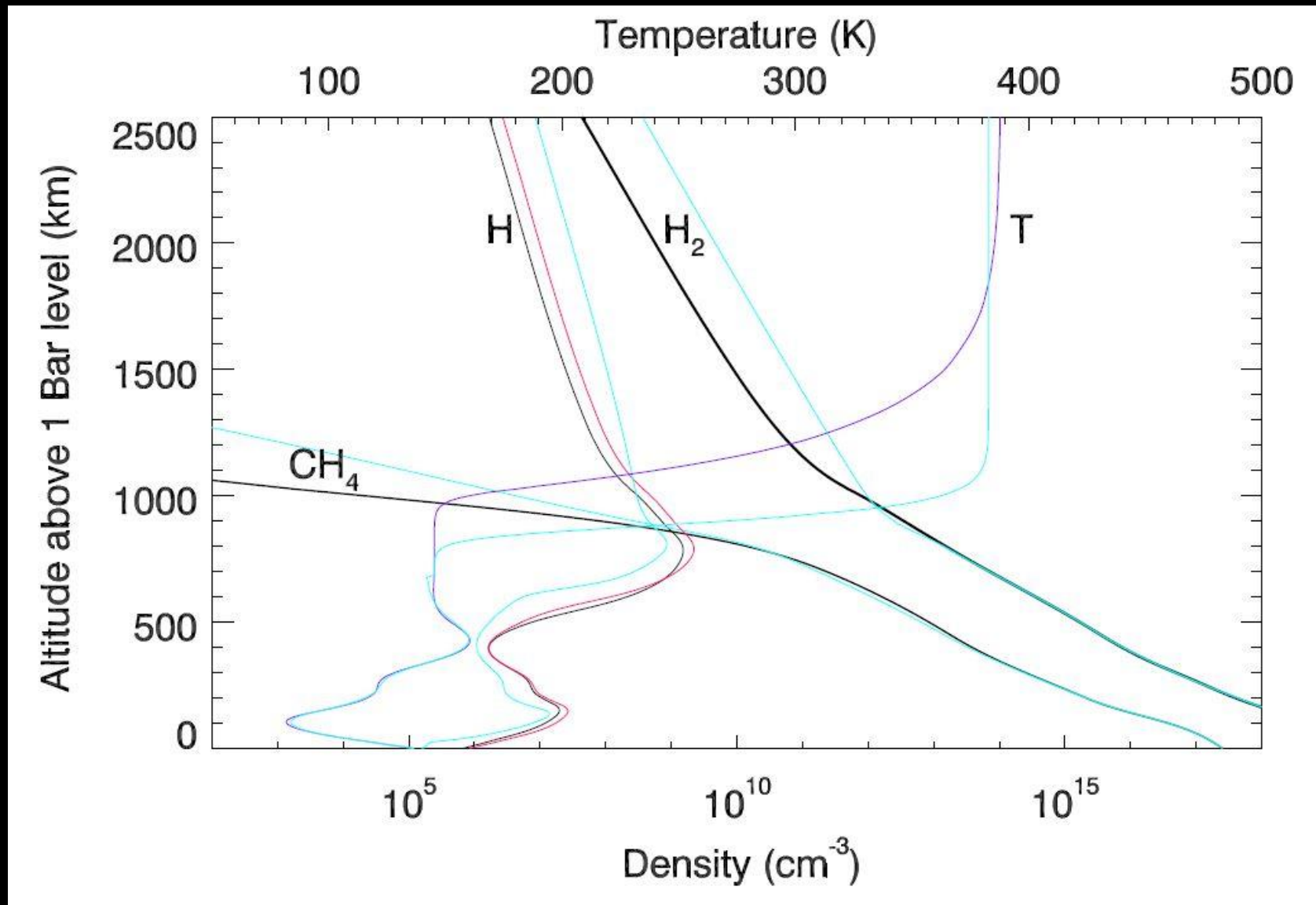
Northern Hemisphere



# What's Up in Space: Saturn's Rings Enrich Atmosphere

- Performed detailed radiative transfer modeling of Saturn's upper atmosphere to investigate the origin of the enhancement of Ly $\alpha$  emission
  - Model used solar x-ray and UV spectra for both solar minimum and maximum conditions
  - Includes Ly $\alpha$  photons from the Sun as modified by the interplanetary H, with solar cycle and Saturn seasonal effects, and Ly $\alpha$  sky background photons
  - Photochemistry model considers scattering of Ly $\alpha$  photons by H, Rayleigh scattering by H<sub>2</sub> (not an important contributor), and absorption by hydrocarbons and water molecules
  - Considered the chemical production, loss, and vertical transport of species

# What's Up in Space: Saturn's Rings Enrich Atmosphere



Example result of photochemistry model for 2° North latitude

Red and black: fixed season models of H distribution based on Cassini UVIS stellar occultation data (black is solar minimum, red is solar maximum)

Aqua: time-variable seasonal model at 2° N at summer-solstice conditions

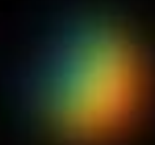
# What's Up in Space: Saturn's Rings Enrich Atmosphere

- Established a reference atmospheric model based on solar minimum conditions in 2017
- Modeling shows the need for 2-3 times the reference model H content to explain the latitudinal emission brightness and line profile
- **Need more H in the upper atmosphere than previously accepted; source of that H is possibly water originating in the rings or Enceladus**

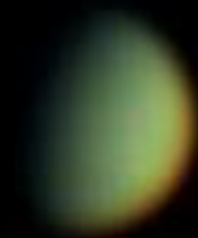
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C-14 with ZWO2600MC



Mercury alt 12 degrees



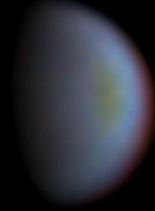
Venus alt 30 degrees

4/13/2023 30 min after sunset

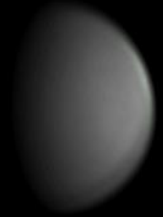
# Planetary Imaging Session April 13th, 2023

Seeing: 7/10

Venus



Wratten 47



IR



UV

Mars



M. Erythraeum  
Nilacus Lacus  
North Polar Cap

10" f/6 Newtonian  
2.5x TeleVue Barlow

*Jim Tomney*



John Hudak



M51 12 Apr 2023 C-14 at f/2 with ZWO2600MC

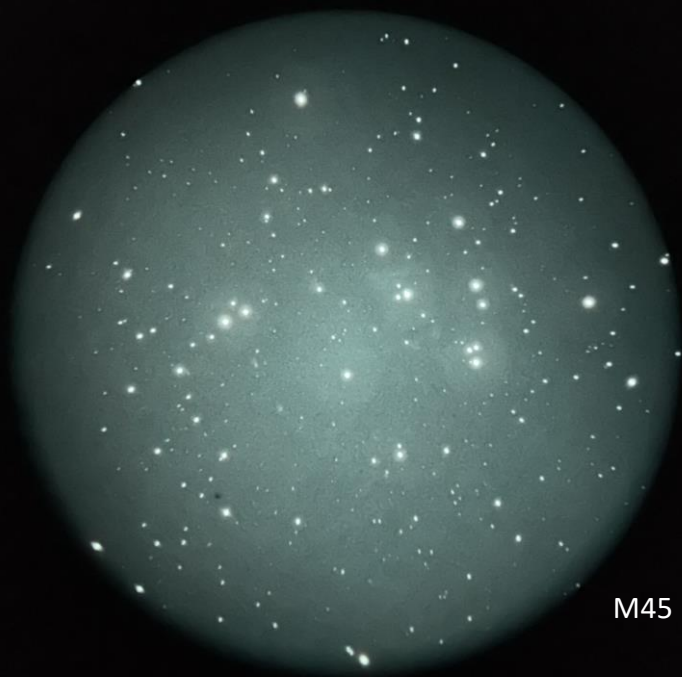
Steven Gauss



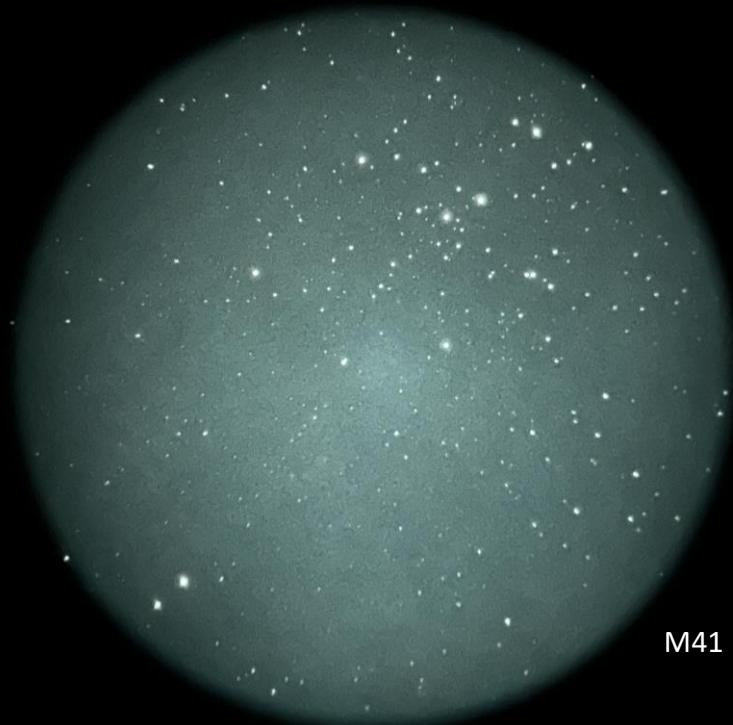
**Cigar Galaxy (M82) and Bode's Galaxy (M81)**

**2023-03-20**

Jim Johnson, Ashton MD  
ZWO ASI6200MM-P/EFW 7 x 2" (LRGB)  
Tele Vue NP101is (4" f/5.4)  
Losmandy G11



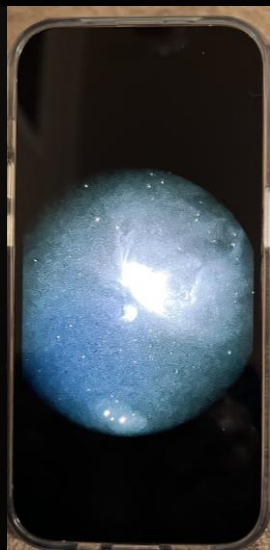
M45



M41



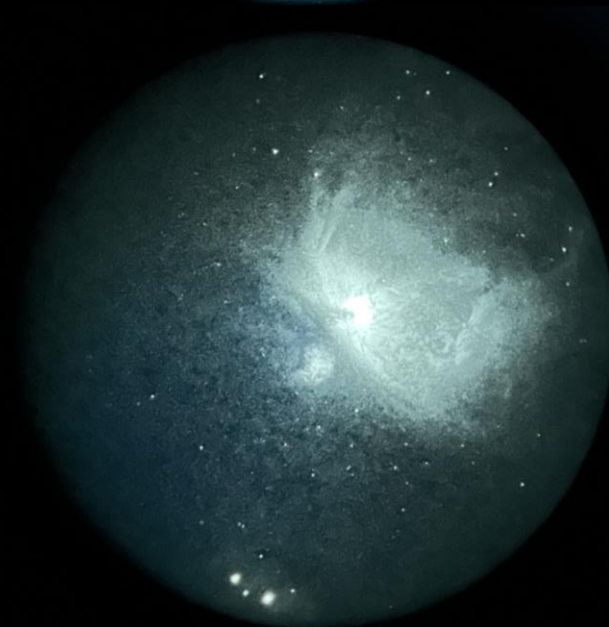
M46  
NGC2438



iPhone 14



Phil Whitebloom  
Alpha Ridge Park  
Moonlit Night



M42

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