

Interesting Astronomical Events for 2024

Our sky is always changing, most changes are predictable and follow patterns, known since ancient times.

Here are some of the more interesting astronomical events visible from St Louis in 2024

Happy observing

Babler State Park

Aug 12, 2023

Total Solar Eclipse Monday April 8, 2024

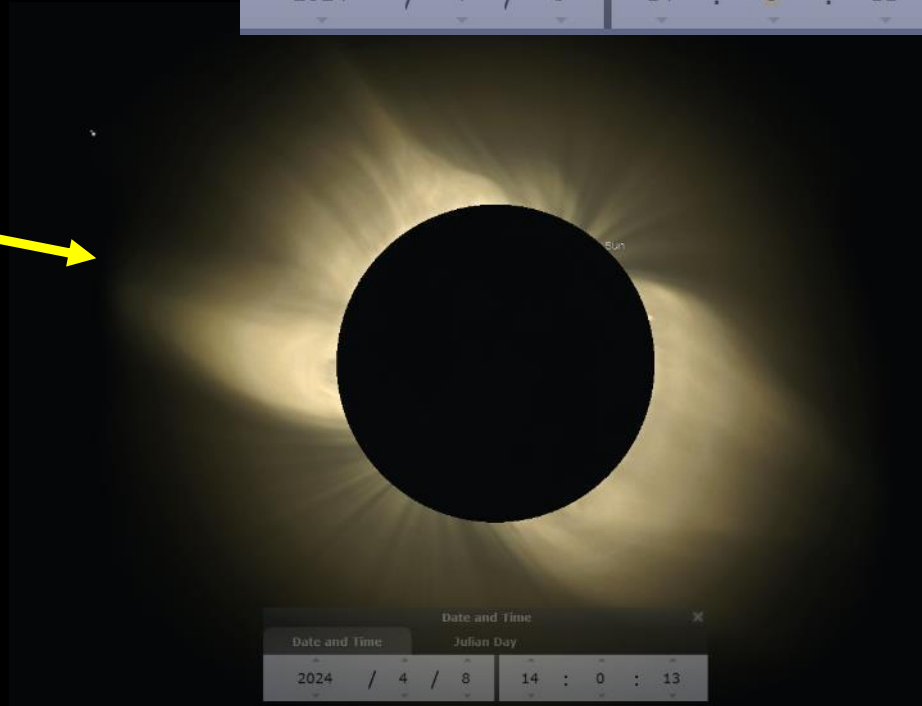
- **Illustration of maximum Sun obscured as seen from St Louis area**

- 12:45 – 3:15pm (CDT)
- Max obscuration – 2pm



- **Illustration of maximum Sun obscured as seen from Jackson, MO area**

- Total Eclipse Begins – 1:58pm
- Total Eclipse Ends – 2:02pm



Eclipse Sim by Stellarium

2024 Solar Eclipse Links

The following websites have more information about locations and exact timing for the April 8th eclipse.

<https://www.timeanddate.com/eclipse/map/2024-april-8>

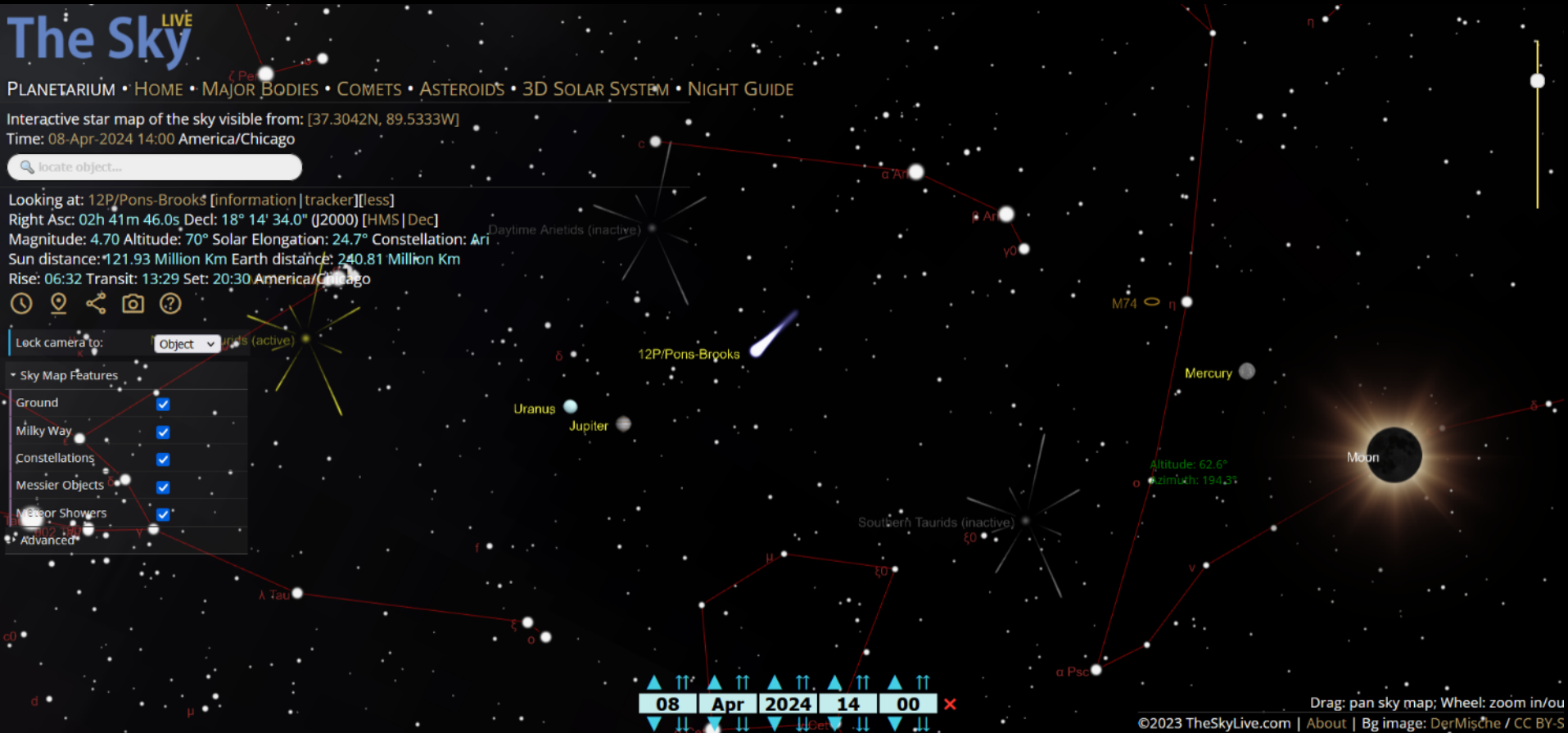
http://xjubier.free.fr/en/site_pages/solar_eclipses/TSE_2024_GoogleMapFull.html

<https://www.greatamericaneclipse.com/april-8-2024>

<https://solarsystem.nasa.gov/eclipses/2024/apr-8-total/overview/>

Possible Eclipse Comet 4-8-2024

mag= +5



- Image from <https://theskylive.com/>
- <https://theskylive.com/planetarium?objects=sun-moon-12p-mercury-venus-mars-jupiter-saturn-uranus-neptune-pluto&localdata=37.3042%7C-89.5333%7C%5B37.3042N%2C+89.5333W%5D%7CAmerica%2FChicago%7C0&obj=12p&h=19&m=00&date=2024-04-08#ra|2.627634317729651|dec|16.61641645253085|fov|30>

Partial Lunar Eclipse

Tuesday Sep 17, 2024

Illustration of maximum Moon obscured

- Eclipse Begins – 9:14pm
- Mid-Eclipse – 9:45pm
- Eclipse Ends – 10:16pm



Eclipse Sim by Stellarium

Full Moon Events 2024

Largest Full Moons of 2024 (SuperMoon)

Sep 17 : diameter: 33' 24"; 357,391km

Oct 17: diameter: 33' 24"; 357,141km

Smallest Full Moons of 2024 (MiniMoon)

Mar 25: diameter: 29' 30"; 405,399km

Apr 23: diameter: 29' 48"; 400,504 km

Image below shows the apparent size difference between largest and smallest dates



No telescope Required

Apogee Moon
Jan 15, 2014
406,532 km

Perigee Moon
Nov 13, 2016
350,853 km

Canon DSLR FL=300mm

Other Moon Events 2024

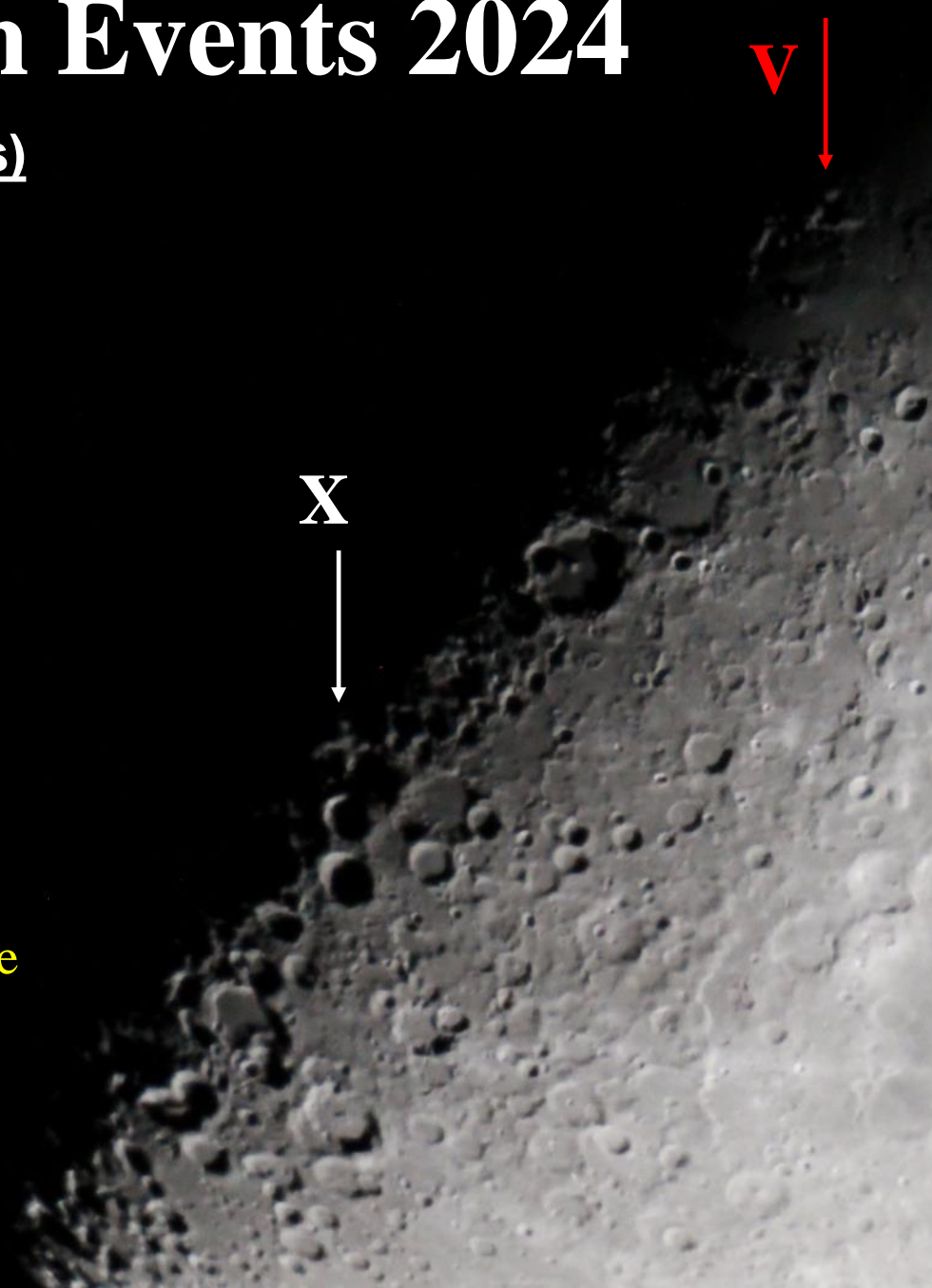
Lunar-X on the Moon (Start Times)

- Feb 16 – 6:45pm Alt=74°
- April 16– 9:05pm Alt=70°
- June 13– 9:38pm Alt=40°
- July 13– 10:28pm Alt=20°
- Aug 11– 7:33pm Alt=29°
- Oct 9– 6:09pm Alt=22°
- Dec 7– 9:33pm Alt=17°

Lunar V also seen at same Sun angles

Yellow=Favorable Moon Conditions are
always near First Quarter phase

Telescope Required



Other Moon Events 2024

Apollo 11 Moon Landing – 55th Anniversary



Eclipse Sim by Stellarium
Telescope Required

2024 Meteor Showers

- January 3 Quadrantids; ZHR=40 (LQ)
- April 22 Lyrids; ZHR=20 (FM-1days)
- May 5 Eta Aquarids; ZHR=60 (NM-1day)
- July 28 Delta Aquarids; ZHR=20 (LQ+1day)
- Aug 12 Perseids; ZHR=60 (FQ)
- Oct 21 Orionids; ZHR=20 (FM+4days)
- Nov 17 Leonids; ZHR=20 (FM+2days)
- Dec 13 Geminids; ZHR=120 (FM-2days)

No telescope Required

Yellow=Favorable Moon Conditions are before Full Moon(FM) and closest to New Moon (NM)

Planet Oppositions 2024

- Pluto – July 23 (dia=0.1 arc-sec)
- Jupiter – Dec 7 (dia=48.2 arc-sec)
- Saturn – Sep 7 (dia=19.2 arc-sec)
- Uranus – Nov 16 (dia=3.8 arc-sec)
- Neptune – Sep 20 (dia=2.4 arc-sec)
- Venus GEE – NONE!!!
- Venus GWE – NONE!!!
- Venus SC – June 4 (9.6 arc-sec)
- Mars – NONE for 2024, Jan 2025 (dia=14.5 arc-sec)
- Yellow=Favorable Conditions
- SC= Superior Conjunction
- GEE= Greatest Elongation East

Planet Oppositions 2024

Relative sizes as seen thru
telescope



Mercury



Venus



Mars



Jupiter



Saturn



Uranus



Neptune

Images from Stellarium

Mercury 2024

Mercury Evening Sky

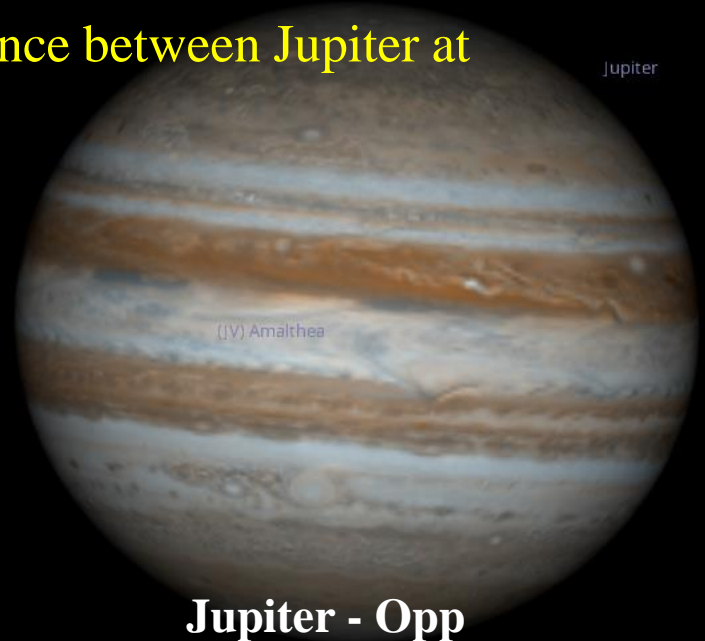
- Mercury GEE – March 24, July 22, Nov 16
- Respective - 7.5, 8.2, 6.7 arc-sec, mag = -0.11, +0.56, -0.23

Mercury Morning Sky

- Mercury GWE – Jan 12, May 9, Sep 4
- Nominal Size 6.6, 8.2, 6.4 arc-sec, mag = -0.18, +0.50, -0.74
- Images below show the apparent size difference between Jupiter at opposition date and Mercury



Mercury - GEE



Jupiter - Opp

Telescope Required

Images from Stellarium

Venus 2024

- Jan 1 - Venus Morning Sky - (14.1 arc-sec, mag = - 4.04)
- June 4 - Venus SC (behind Sun) (9.6 arc-sec, invisible)
- Dec 31 - Venus Evening Sky - (22.0 arc-sec, mag = - 4.42)
- Images below show the apparent size difference between Jupiter at opposition date and Venus



Venus - Jan 1



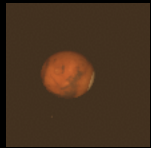
Jupiter at opposition

Telescope Required

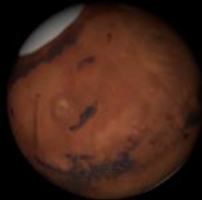
Images from Stellarium

Mars 2024

- Jan 1 – 3.9 arc-seconds, mag = +1.4
- Dec 31 – 14.2 arc-seconds, mag = -1.
- Mars reaches opposition in January 2



Jan 1



Dec 31



Jupiter at opposition

Telescope Required

Images from Stellarium

Jupiter 2024

- Jan 1 – 43.8 arc-seconds, mag = -2.58
- ★ • Dec 7 - Jupiter at opposition, 48.2 arc-seconds, mag= -2.81
- Images below show the apparent size difference between January 1st and the opposition date. Planets appear largest near the opposition dates because they are closest to Earth at that time.



Telescope Required

Images from Stellarium

Jupiter 2024

- Date: Nov 29, 2024
- ★• Jupiter's Moons at extreme elongation
- Green lines are predicted maximum elongations, distances based on orbital distance from planet



Satellite	Distance	X of Jupiter's Diameter
Io	422,000	2.95
Europa	671,000	4.69
Ganymede	1,070,000	7.48
Callisto	1,883,000	13.17

Telescope Required

Images from Stellarium

Saturn 2024

- Jan 1 – 16.1 arc-seconds (37.9 arc-sec rings), mag = + 0.96
- ★ • Sep 7 - Saturn Opposition – 19.2 arc-seconds (44.7 arc-sec rings), mag = + 0.57
- Rings are closing until edge-on in 2025
- Images below show the apparent size difference between January 1st and the opposition date. Planets appear largest near the opposition dates because they are closest to Earth at that time.



Jan 1



Sep 7 (Opp)

Telescope Required

Images from Stellarium

Saturn Ring Tilt 2023-2026

- 8-27-2023 (+9° 8' 40'')

- 6-23-2024 (+1° 57' 44'')

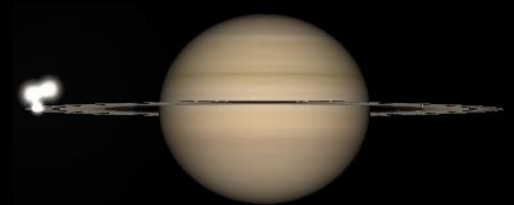
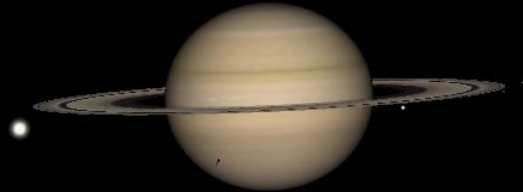
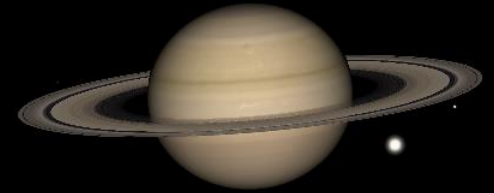
- 9-8-2024 (+3° 43' 28'')

- 3-23-2025 (0 deg)

- 9-21-2025 (-1° 49' 0'')

- 11-25-2025 (-0° 22' 18'')

- 10-4-2026 (-7° 30' 22'')

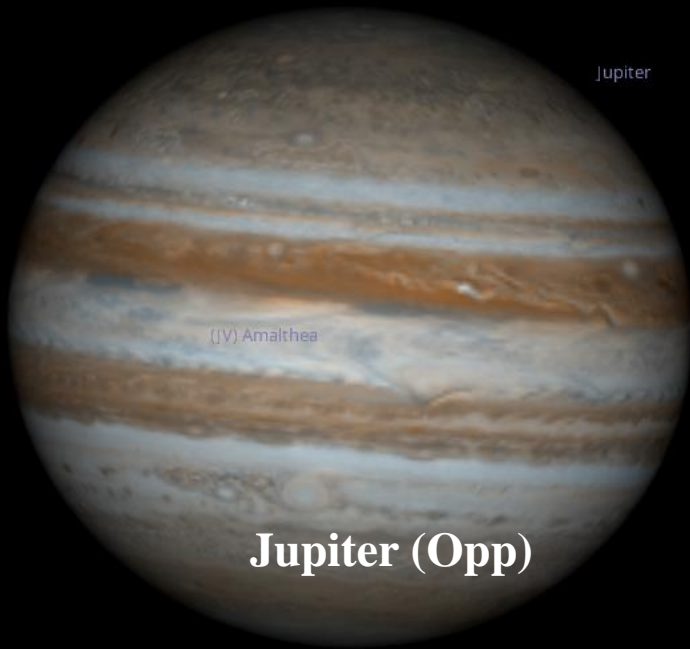


Telescope Required

Images from Stellarium

Uranus 2024

- **Nov 16 - Uranus opposition, 3.8 arc-seconds, mag = + 5.64**
- Images below show the apparent size difference between Jupiter at opposition date and Uranus' opposition. Planets appear largest near the opposition dates because they are closest to Earth at that time.



Jupiter (Opp)

Telescope Required

Images from Stellarium

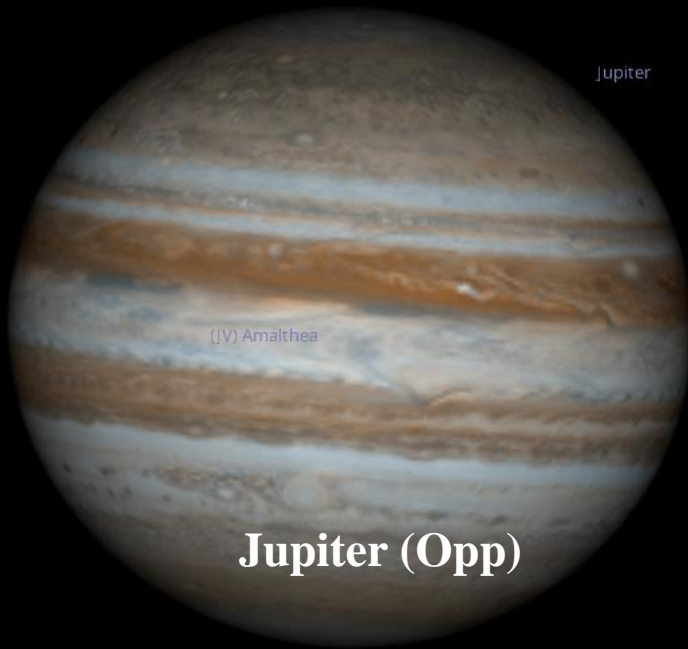


Uranus and its moons

Nov 16 (Opp)

Neptune 2024

- **Sep 20 - Neptune opposition, 2.4 arc-sec, mag = +7.68**
- Images below show the apparent size difference between Jupiter at opposition date and Neptune's opposition. Planets appear largest near the opposition dates because they are closest to Earth at that time.



Telescope Required

Images from Stellarium

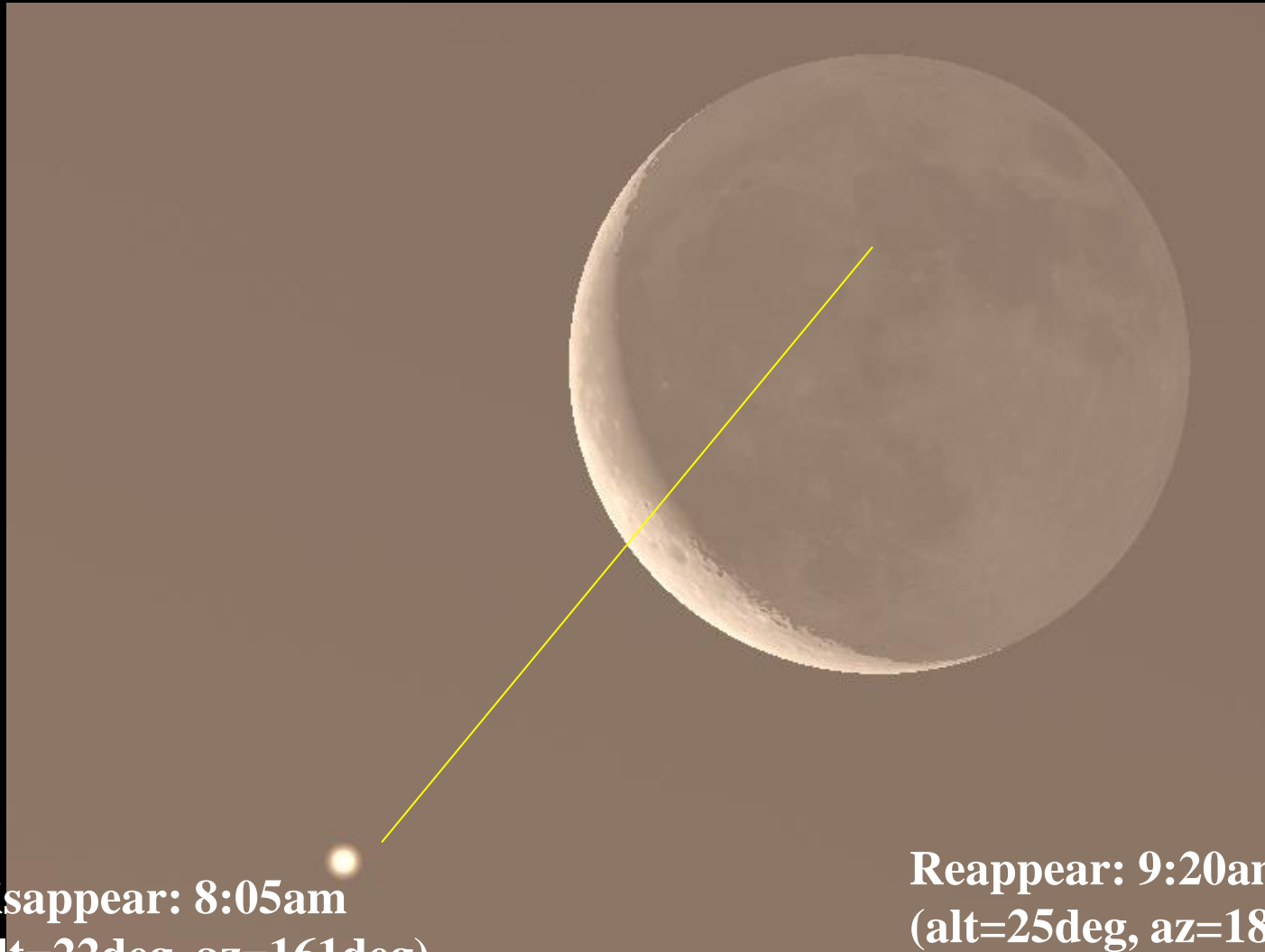


Occultations for 2024

Mon	Day	Event	Object	Daylight/Morning/evening	NOTES
1	8	Antares 0.8°S of Moon	Antares	m	Lunar occultation of Antares The Moon will pass in front of Antares (Alpha Scorpii), creating a lunar occultation visible from the Contiguous United States and Mexico. Mon, 08 Jan 2024 at 09:17 CDT (184 days away) in Scorpius
3	3	Antares 0.4°S of Moon	Antares	m	Lunar occultation of Antares The Moon will pass in front of Antares (Alpha Scorpii), creating a lunar occultation visible from the Americas, Bonaire, Saint Eustatius and Saba, Grenada and Navassa Island. Sun, 03 Mar 2024 at 03:01 CDT (239 days away) in Scorpius
4	7	Venus 0.4°S of Moon: Occn.	Venus	d	Lunar occultation of Venus The Moon will pass in front of Venus, creating a lunar occultation visible from countries and territories including the Contiguous United States, Canada, Mexico and Greenland amongst others. Sun, 07 Apr 2024 at 11:18 CDT (274 days away) in Pisces
5	23	Antares 0.4°S of Moon	Antares	e	Lunar occultation of Antares The Moon will pass in front of Antares (Alpha Scorpii), creating a lunar occultation visible from Africa, the Americas, Bonaire, Saint Eustatius and Saba, Grenada and Navassa Island. Thu, 23 May 2024 at 22:17 CDT (320 days away) in Scorpius
7	13	Spica 0.9°S of Moon	Spica	e	Lunar occultation of Spica The Moon will pass in front of Spica (Alpha Virginis), creating a lunar occultation visible from countries and territories including the Contiguous United States, Mexico, Canada and Nicaragua amongst others. Sat, 13 Jul 2024 at 22:19 CDT (371 days away) in Virgo
9	6	Spica 0.6°S of Moon	Spica	d	Lunar occultation of Spica The Moon will pass in front of Spica (Alpha Virginis), creating a lunar occultation visible from Africa. Fri, 06 Sep 2024 at 12:34 CDT (426 days away) in Virgo
11	27	Spica 0.4°S of Moon	Spica	m	Lunar occultation of Spica The Moon will pass in front of Spica (Alpha Virginis), creating a lunar occultation visible from the Contiguous United States, Canada, Bahamas and Cuba. Wed, 27 Nov 2024 at 06:39 CDT (508 days away) in Virgo

Occultations for 2024

Occultation of Antares by Moon. 8 Jan 2024 Daytime sky



Telescope Required

Images from Stellarium

Occultations for 2024

Occultation of Antares by Moon. 3 March 2024 morning sky



**Disappear: Antares below
horizon**

**Reappear: 1:50am
(alt=5deg, az=130deg)**

Telescope Required

Images from Stellarium

Occultations for 2024

Occultation of Venus by Moon. 7 April 2024 daytime event



Disappear: : 11:30am
(alt=50deg, az=165deg)

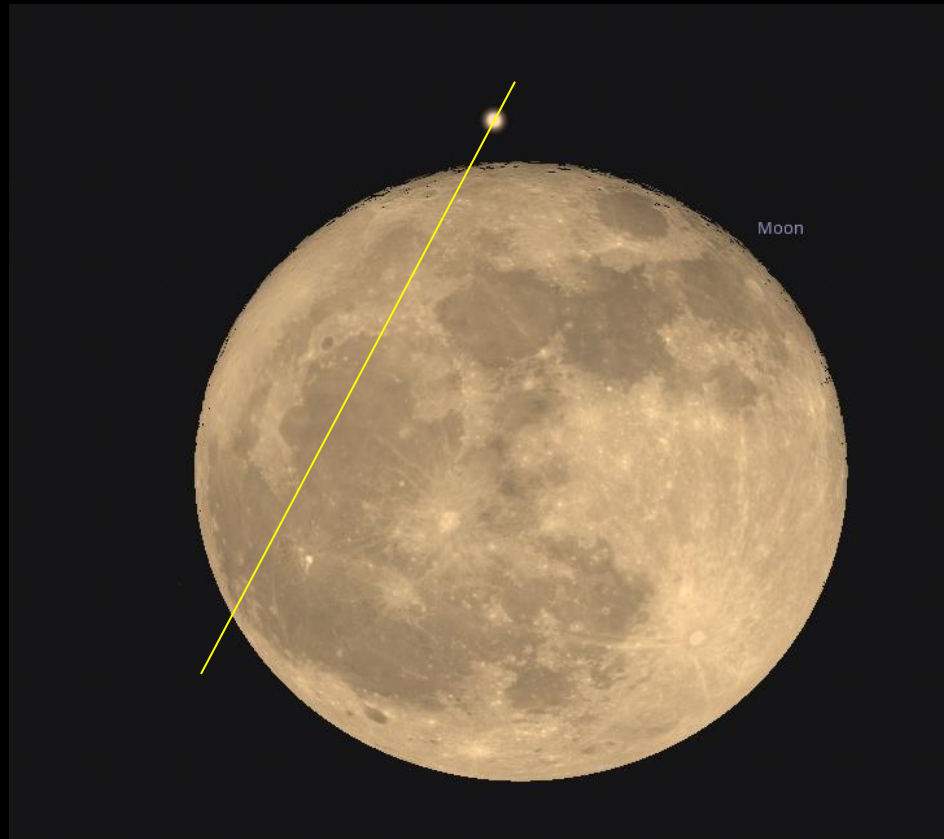
Reappear: 12:10pm
(alt=51deg, az=179deg)

Telescope Required

Images from Stellarium

Occultations for 2024

Occultation of Antares by Moon. 23 May 2024 evening sky



**Disappear: Antares below
horizon**

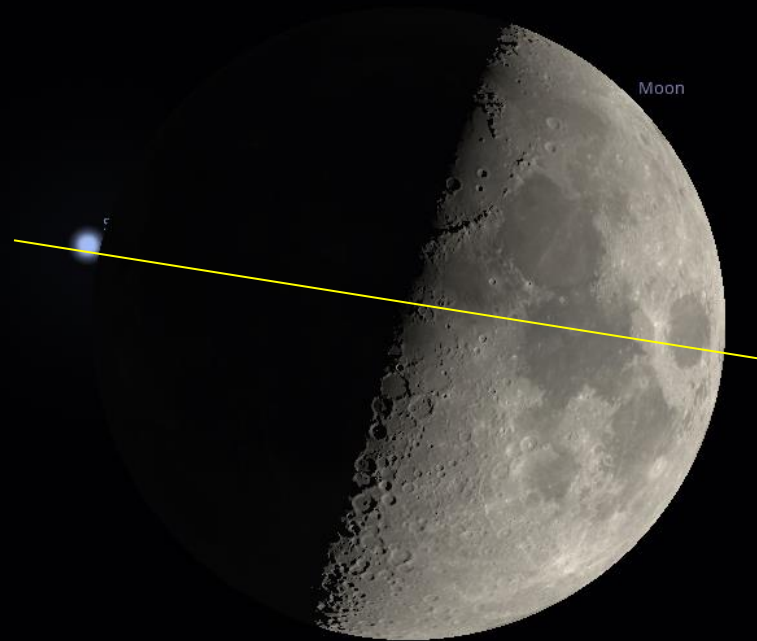
**Reappear: 9:13pm
(alt=2deg, az=127deg)**

Telescope Required

Images from Stellarium

Occultations for 2024

Occultation of Spica by Moon. 13 July 2024 evening event



Disappear: : 10:10pm
(alt=22deg, az=233deg)

Reappear: 11:28pm
(alt=9deg, az=246deg)

Binoculars Required

Images from Stellarium

Occultations for 2024

Occultation of Spica by Moon. 6 Sep 2024 daytime event



Disappear: : 10:33am
(alt=7deg, az=109deg)

Reappear: 11:06am
(alt=12deg, az=115deg)

Telescope Required

Images from Stellarium

Occultations for 2024

Occultation of Spica by Moon. 27 Nov 2024 morning event



Disappear: : 4:30am
(alt=9deg, az=113deg)

Reappear: 5:33am
(alt=20deg, az=124deg)

Binoculars Required

Images from Stellarium

More Occultations for 2024

Mon	Day	Event
3	14	Pleiades 0.4°N of Moon
9	22	Pleiades 0.2°S of Moon
11	16	Pleiades 0.1°S of Moon

Conjunction for 2024

Conjunction of M45 by Moon. 16 Feb 2024 evening event



Closest: : 7:00pm (alt=72deg, az=217deg)

Conjunction for 2024

Conjunction of M45 by Moon. 14 Mar 2024 evening event

Closest: : 12:45am (alt=9deg,
az=292deg)



Binoculars Required

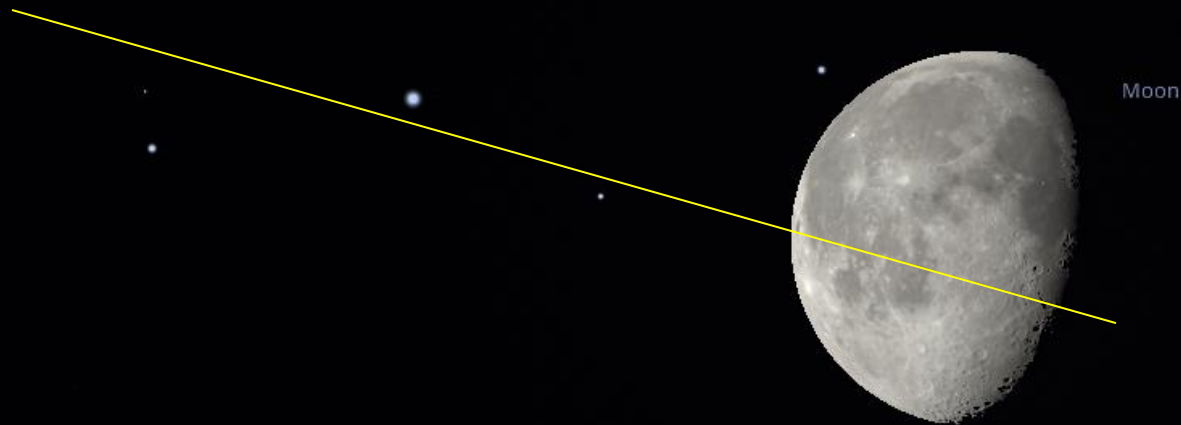
Images from Stellarium

Date and Time



Occultations for 2024

Occultation of M45 by Moon. 22 Sep 2024 morning event



Disappear: : 4:30am
(alt=75deg, az=176deg)

Reappear: Sunrise
(alt=62deg, az=247deg)

Binoculars Required

Images from Stellarium

Conjunction for 2024

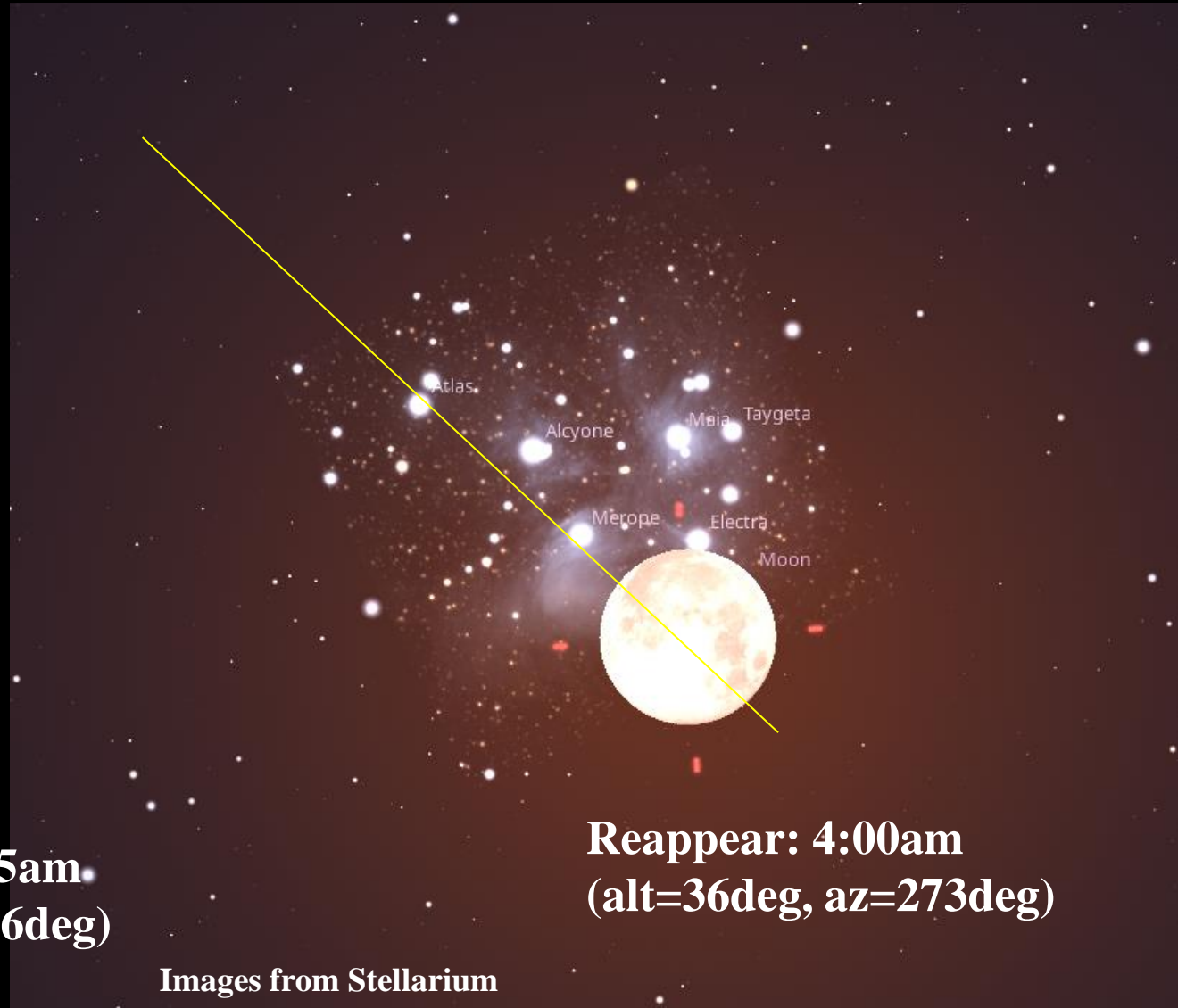
Conjunction of Moon and Saturn. 10 Nov 2024 evening event

**Closest: : 8:30pm (alt=41deg,
az=195deg)**



Occultations for 2024

Occultation of M45 by Moon. 16 Nov 2024 morning event



Disappear: : 12:45am
(alt=72deg, az=216deg)

Reappear: 4:00am
(alt=36deg, az=273deg)

Telescope Required

Images from Stellarium

Lunar and Planetary Conjunctions 2024

Mon	Day	Event	EVENT Type	Object
8	20	Saturn 0.4°S	LP	Saturn
9	17	Saturn 0.3°S	LP	Saturn
12	18	Mars 0.9°S	LP	mars

Lunar and Planetary Conjunctions 2024

Close approach of the Moon and Saturn

20 Aug 2024 at 9:24pm

At Moonrise



Lunar and Planetary Conjunctions 2024

Close approach of the Moon and Saturn

17 Sep 2024 at 6:00am

At Moonset



Lunar and Planetary Conjunctions 2024

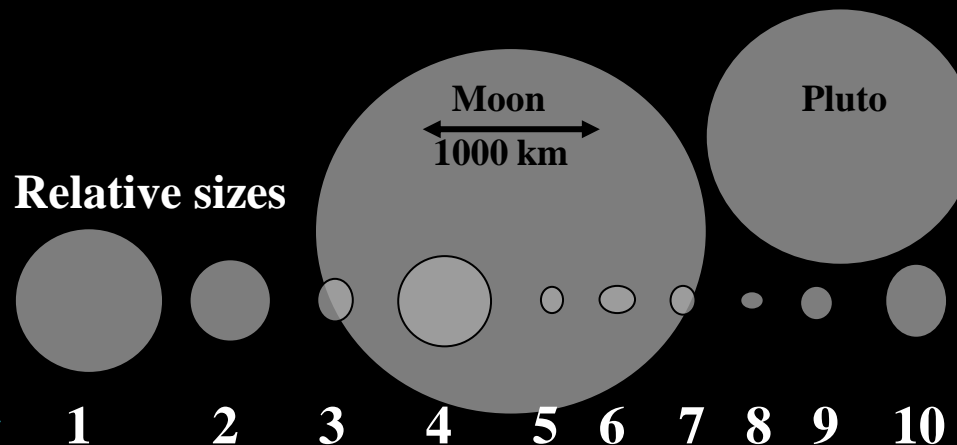
Close approach of the Moon and Mars

18 Dec 2024 at 4:00am



Asteroid Oppositions 2024

Mo	Day		
7	6	mag=7.3	1 Ceres
5	17	mag=9.0	2 Pallas
3	3	mag=8.6	3 Juno
8	6	mag=8.3	7 Iris
3	30	Mag=17.1	136472 Makemake
4	20	mag=17.3	136108 Haumea
10	17	mag=18.6	136199 Eris
7	23	mag=15.0	134340 Pluto



Telescope Required

1 2 3 4 5 6 7 8 9 10

Planetary Conjunctions 2024

Mon	Day	Event	EVENT Type	Object
4	20	Uranus 0.5deg from Jupiter	PC	Uranus
4	29	Neptune 0.1deg from Mars (morning sky)	PC	Neptune+Mars
6	4	Mercury 0.1deg from Jupiter	PC	Jupiter
7	15	Mars 0.6deg from Uranus	PC	Uranus
8	4	Venus 1 deg from Regulus	PC	Venus
9	8	Mars 0.9 deg from M35	PC	Mars

Images from Stellarium

Planetary Conjunctions 2024

Close approach of Jupiter and Uranus

20 April 2024 at 8:15pm (at Sunset)



Images from Stellarium

Binoculars Required

Planetary Conjunctions 2024

Close approach of Mars and Neptune

29 April 2024 at 5:00am (at Sunrise)



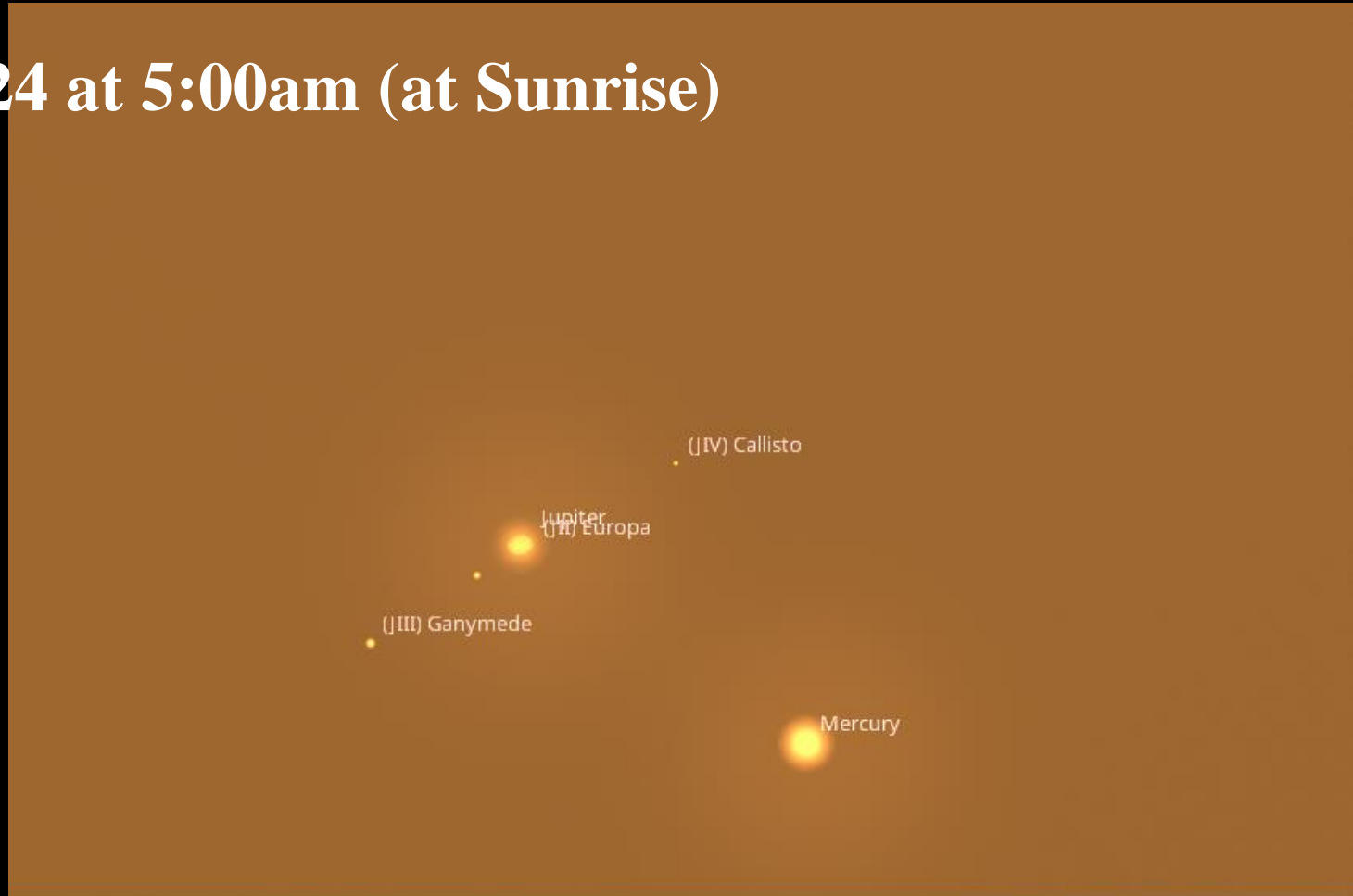
Images from Stellarium

Telescope Required

Planetary Conjunctions 2024

Close approach of Jupiter and Mercury

4 June 2024 at 5:00am (at Sunrise)



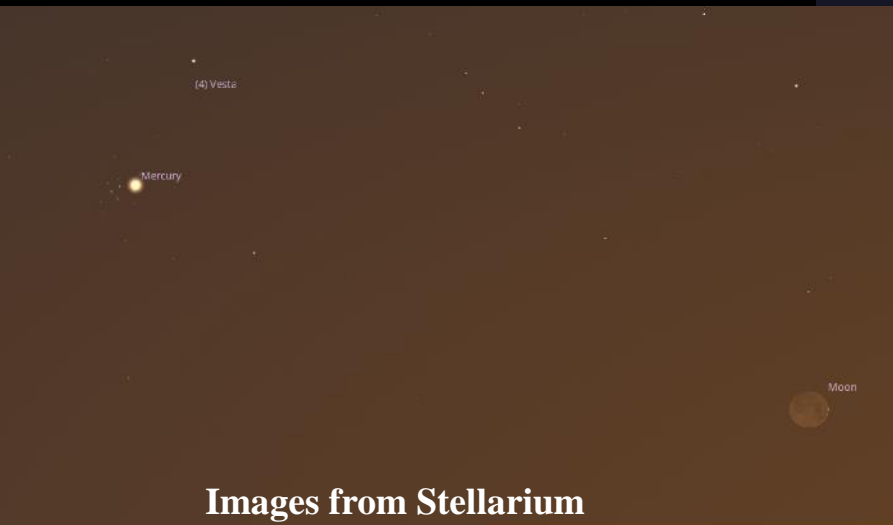
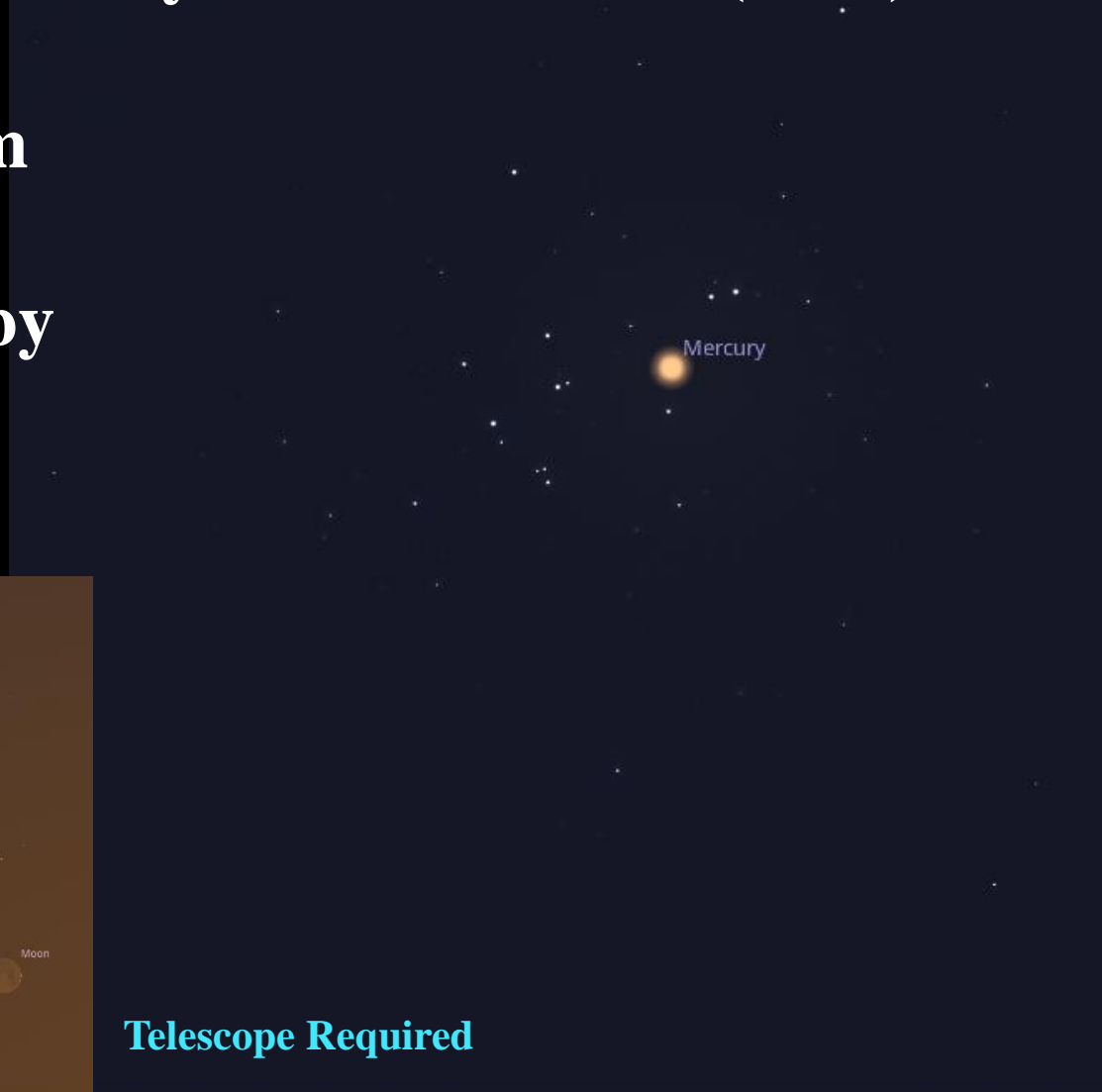
Planetary Conjunctions 2024

Close approach of Mercury crosses Beehive (M44)

6 July 2024 at 9:20pm

Alt= 4 degrees

Crescent Moon nearby



Images from Stellarium

Telescope Required

Planetary Conjunctions 2024

Close approach of Mars and Uranus

15 July 2024 at 2:00am



Images from Stellarium

Telescope Required

Planetary Conjunctions 2024

Close approach of Venus and Regulus

4 Aug 2024 at 8:45pm (Sunset)



Images from Stellarium

Binoculars Required

Planetary Conjunctions 2024

Close approach of Jupiter and Mars

14 Aug 2024 at 5:00am



Images from Stellarium

Planetary Conjunctions 2024

Close approach of Mars (mag= +0.8) and M35

8 Sep 2024 at 5:00am



Images from Stellarium

Telescope Required

Public Telescope Viewing
At Jefferson College Observatory
+38.264001, -90.556321

Mon	Day	Event
1	20 Saturday	JCO - Observatory Public Viewing
2	17 Saturday	JCO - Observatory Public Viewing
3	16 Saturday	JCO - Observatory Public Viewing
4	20 Saturday	JCO - Observatory Public Viewing
5	18 Saturday	JCO - Observatory Public Viewing
6	15 Saturday	JCO - Observatory Public Viewing
7	20 Saturday	JCO - Observatory Public Viewing
8	17 Saturday	JCO - Observatory Public Viewing
9	21 Saturday	JCO - Observatory Public Viewing
10	19 Saturday	JCO - Observatory Public Viewing
11	16 Saturday	JCO - Observatory Public Viewing

Public Telescope Viewing At Francis Park

Mon	Day	Event
4	17 Wednesday	Francis Park Wednesday closest to First Quarter
5	15 Wednesday	Francis Park Wednesday closest to First Quarter
6	12 Wednesday	Francis Park Wednesday closest to First Quarter
7	10 Wednesday	Francis Park Wednesday closest to First Quarter
8	7 Wednesday	Francis Park Wednesday closest to First Quarter
9	11 Wednesday	Francis Park Wednesday closest to First Quarter
10	9 Wednesday	Francis Park Wednesday closest to First Quarter

April-Oct Wednesday closest to First Quarter Moon each month

Public Telescope Viewing At Tower Grove Park

Mon	Day	Event
4	13 Saturday	Tower Grove Park Stargazing
5	18 Saturday	Tower Grove Park Stargazing
6	15 Saturday	Tower Grove Park Stargazing
7	13 Saturday	Tower Grove Park Stargazing
8	10 Saturday	Tower Grove Park Stargazing
9	14 Saturday	Tower Grove Park Stargazing
10	12 Saturday	Tower Grove Park Stargazing

Happy observing

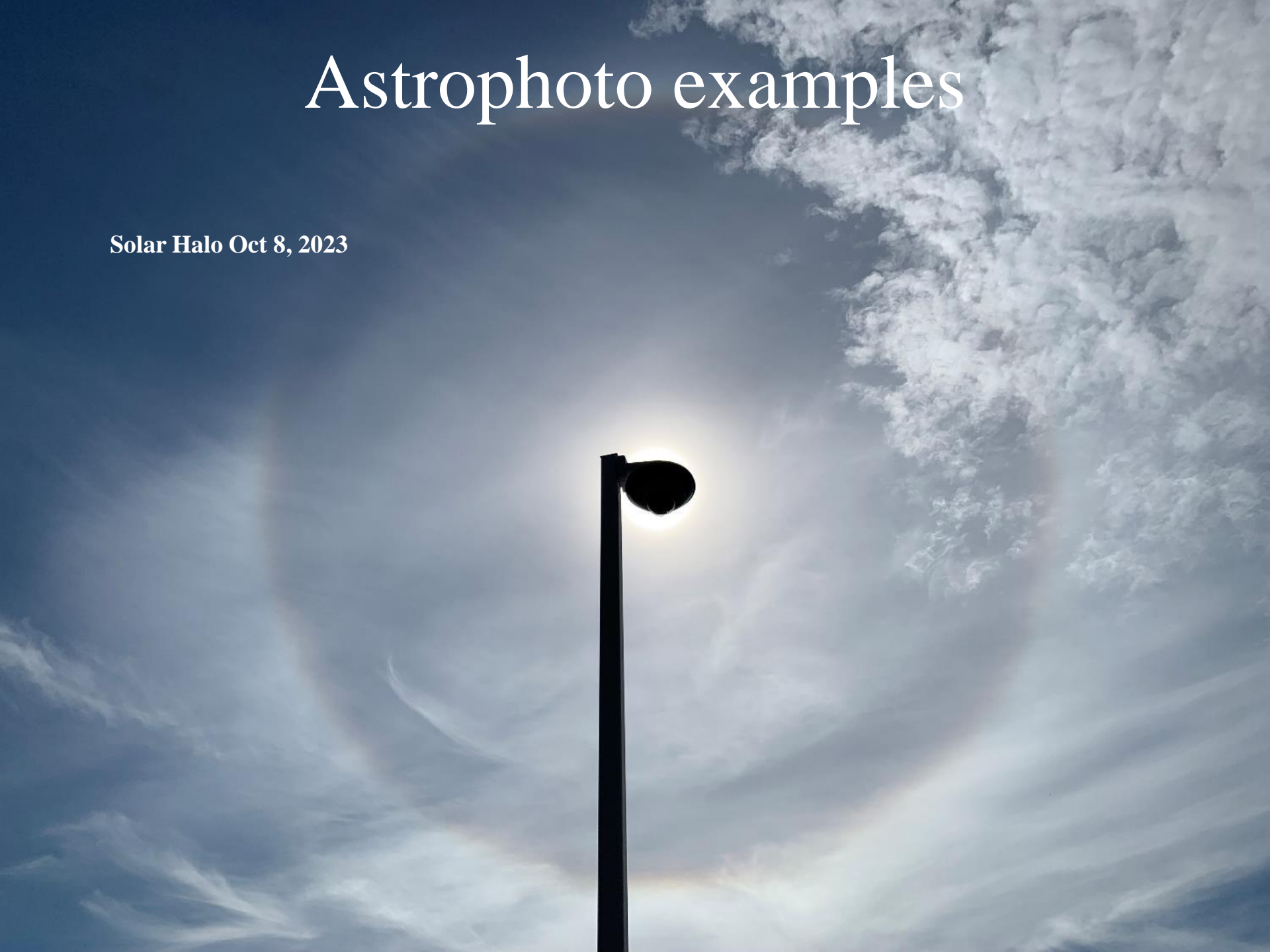
Astrophoto examples



Solar Eclipse Oct 14, 2023

Astrophoto examples

Solar Halo Oct 8, 2023



Astrophoto examples



Moon and Antares Aug 24, 2023

Astrophoto examples



Sunspots June 29, 2023

Astrophoto examples



Venus June 17, 2023

Astrophoto examples



Jupiter and Moon Occultation May 17, 2023

Astrophoto examples



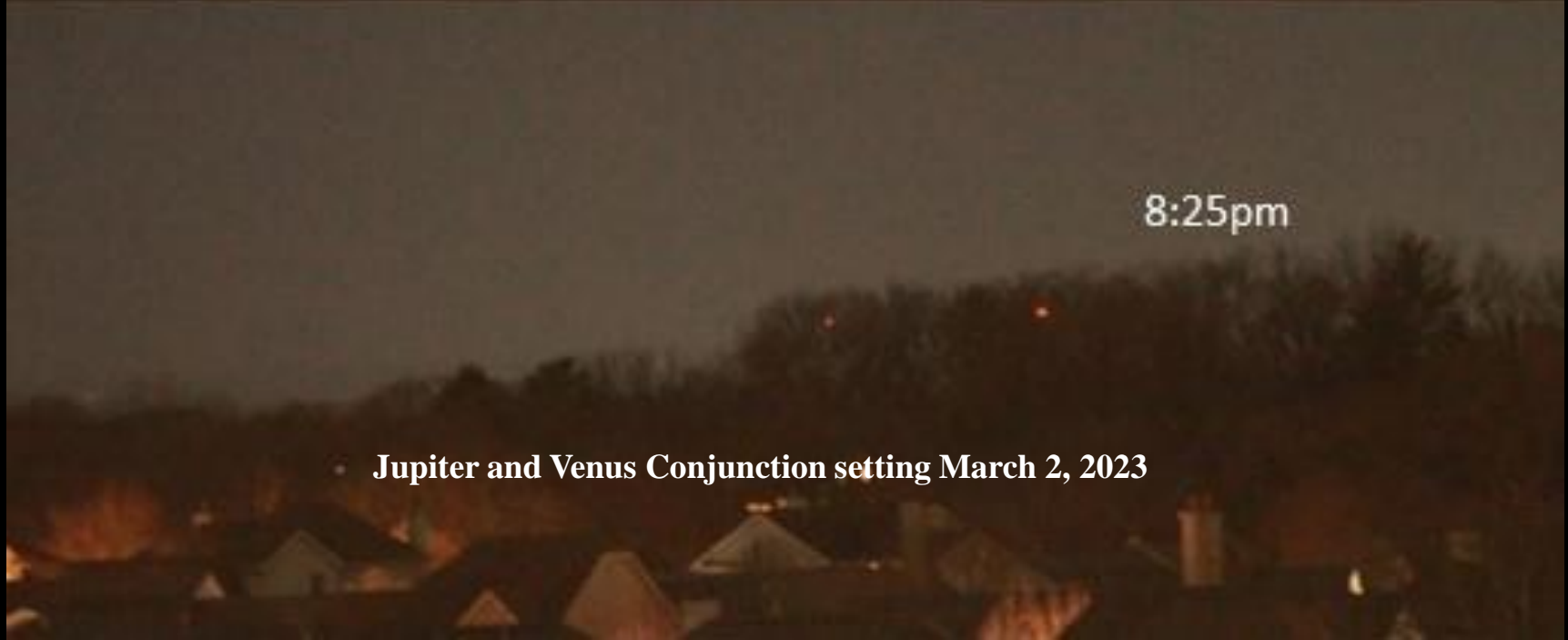
Aurora April 24, 2023

Astrophoto examples



Venus and Pleiades (M45) – April 11, 2023

Astrophoto examples



Astrophoto examples



Mars and Moon Conjunction Feb 27, 2023

Astrophoto examples



Moon and Jupiter Conjunction Feb 22, 2023