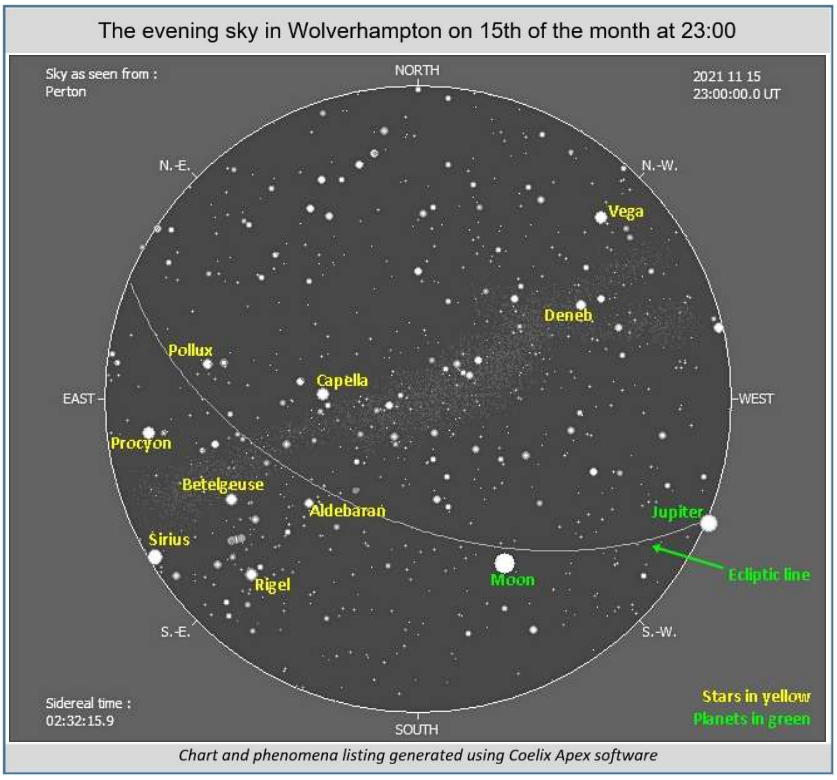
The Night Sky in November 2021

- a quick and easy guide



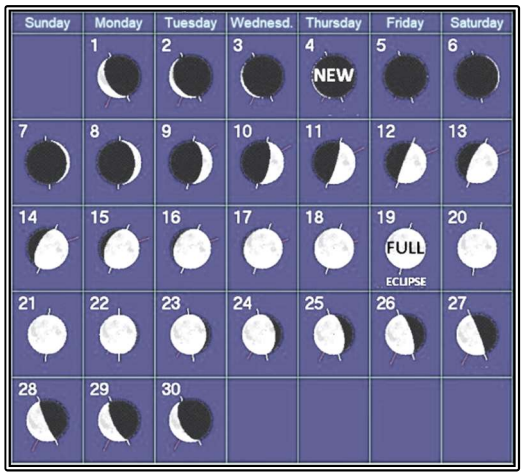
Perton Library Astronomy Group

Monthly Guide Compiled by Doug Bickley

MOON PHASES	
New Moon	4 Nov
First quarter	11 Nov
Full Moon	19 Nov
Third (last) quarter	27 Nov

Events this month to look out for:

2 Dwarf planet Ceres close to Aldebaran (evening)
3 Crescent Moon above Mercury and Spica (morning twilight)
5 Uranus at opposition – visible all night
6 Venus south of Lagoon Nebula (evening twilight)
7 Crescent Moon right of Venus (evening twilight)
8 Crescent Moon left of Venus (evening twilight)
10 Mercury and Mars in conjunction (morning twilight)
10 Moon below Saturn (evening)
11 First quarter Moon below Jupiter (evening)
12 Northern Taurid meteor shower peak (favourable, morning)
17 Leonid meteor shower peak (unfavourable, morning)
19 Partial lunar eclipse (morning, see below)
19 Full Moon between the Pleiades and Hyades (late evening)
23 Moon forms a triangle with Castor and Pollux (evening)
24 Moon above Beehive Cluster M44 (late evening)



Moon:

On the right is my usual schematic of the Moon phases over the month of November.

There are a few things happening this month as you can see from the list above, and there should be some good photo opportunities, so I thought that I would set the scene by talking about the Moon in general – some of this may be quite basic stuff so apologies to my more experienced readers.

Full Moon is on the 19 November and this one is called the Beaver Moon. There has been disagreement over the origin of this name, some say it comes from Native Americans setting beaver traps during this month, while others say the name comes from the heavy activity of beavers building their winter dams. Another name is the frost moon.

What's all this about phases? The Moon orbits the Earth once every 27.322 days and it also takes approximately 27 days for the moon to rotate once on its axis, a sidereal month. As a result, the moon does not seem to be spinning but appears to observers from Earth to be keeping almost perfectly still. The Moon's phases repeat every 29.5 days, if its orbit around the Earth only takes 27 how does that work? In that time, as our Moon moves around Earth, the Earth also moves around the Sun, and therefore the Moon must travel a little further in its path to make up for the added distance and complete its phase cycle.

It moves across the sky rapidly over the course of a night, you can see this very clearly if you view the moon through binoculars or a telescope without tracking. From night to night it rises and falls at different times and in different parts of the sky. And of course its entire appearance changes over the course of two weeks from a bright circle to a circle sliced in half and finally fading to nothing. Here's how the phases pan out over that time:

You may know that the Moon's orbit around Earth is not a perfect circle, but elliptical, with one side closer to Earth than the other. As a result, the distance between the Moon and Earth varies throughout the month and the year. On average, the distance is 384,400km (238,855 miles). The point on the Moon's orbit closest to Earth is called the **perigee** and the point farthest away is the **apogee**.

As well as the pleasing viewing opportunities set out in the list above, there are a couple of events we need to mention. New Moon is on 4 November and this one will be a Super New Moon when the Moon is at perigree. There will be two Super New Moons in 2021. The first takes place on November 4 & 5 and the other on December 3 & 4. The Super New Moons, like any other New Moon, of course won't be visible from Earth, but the dark night skies will provide great opportunities for some great night sky watching, especially around December 4 when the Geminids start becoming active.

On 19 November the Full Moon coincides with apogee and is a Micro Full Moon.

Not that micro but is does appear a lot smaller than usual.

Because a Micromoon is further away, it looks approximately 14% smaller than a Supermoon. In addition, the illuminated area appears 30% smaller, so it might look a little less bright.

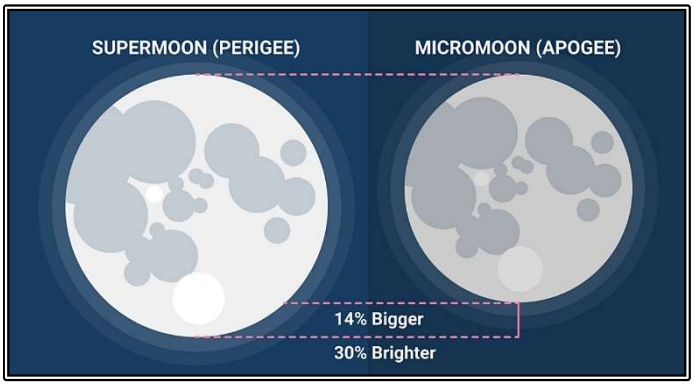


Image courtsesy of timeanddate.com

There will be a Partial Lunar Eclipse visible from our location on 19 November through the morning twilight and if you are lucky you will be able to see a shadow appear across the face of the Moon and it will change colour. Here are the times:

Begins:	Fri, 19 Nov 2021, 06:02
Maximum:	Fri, 19 Nov 2021, 07:32
Ends:	Fri, 19 Nov 2021, 07:37
Duration:	1 hour, 36 minutes

A partial lunar eclipse occurs when the Earth moves between the Sun and Moon but the three celestial bodies do not form a straight line in space. When that happens, a small part of the Moon's surface is covered by the darkest, central part of the Earth's shadow, called the umbra. The rest of the Moon is covered by the outer part of the Earth's shadow called the penumbra.

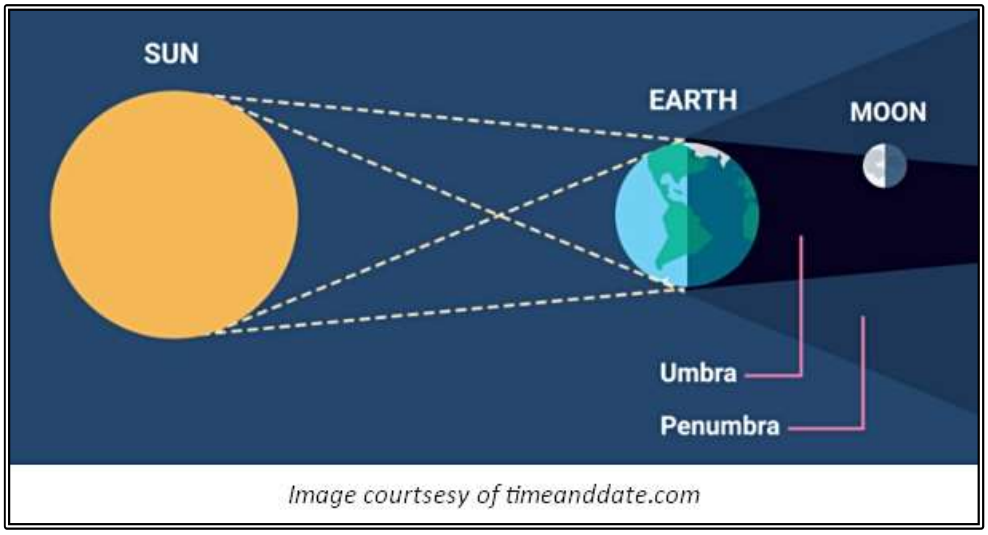


Image courtsesy of timeanddate.com

The true maximum point of this eclipse cannot be seen in Wolverhampton because the Moon is below the horizon at that time, but a hint of the penumbral stage will be visible in the pre-dawn sky weather permitting, and you may see a darkening of the northern limb. Since the Moon is near the horizon at this time, the best way to see the event would be to go to a high point or to find an unobstructed area with free sight to WNW.

The last partial lunar eclipse happened 50 years to the day after the launch of the Apollo 11 mission on 16 July 2019, also coinciding nicely with a Perton Library Astronomy Group Meeting.

Here are a couple of pictures from that night:

Doug Bickley - Canon 450D DSLR with 300mm lens

Cath Adams - iPhone on 76mm telescope

Planets this month:

Here is the usual run down of planetary movements for the month of November:

Jupiter is still in the South in Capricornus, dominating the evening sky at around 22° its highest point during early evening. It is an easy unmistakable target. However by month end viewing will be compromised by evening twilight.

Saturn is still in the South in Capricornus and is a good observing target at an altitude of 18° but towards month end the evening twilight will start to spoil viewing conditions. Towards month end look out for Jupiter, Saturn and Venus, all in a line with Saturn in the middle.

Mars is in the SE in Libra, a morning object at a low altitude of 4° and too close to the Sun to be seen at the start of the month but getting sufficient separation so that at mag +1.6 it can be seen after the first week. On the 10 and 11 November it sits near to mag -0.8 Mercury.

Venus is in the SSW in Sagittarius and is an evening object, shining at mag -4.7, but it is in the southern ecliptic part of the sky and its altitude is fairly low. Despite its intense magnitude making it stand out in the sky in the S to WSW, it remains low after sunset all month, so observing may not be good. If you do see it you may be able to see a crescent shape.

Mercury is still in the ESE in Virgo at a low altitude of 6° but a good morning object at the start of the month, rising 100 minutes before sunrise. Over the month it approaches superior conjunction, which occurs on the 29th. Its brightness increases over the month from mag -0.8 to mag -1.2 at month end.

Uranus is still in the South in Aries and is visible all night at an altitude of 52°.

Neptune is still in the South in Aquarius and an altitude of 32° in the evening sky and at mag +7.9 and binoculars at least are needed to spot it.

Meteor Showers:

The Northern Taurid meteor shower is visible during the month looking towards the constellation of Taurus but they are not particularly frequent because the comet stream is very spread out and dispersed, taking a long time for the Earth to pass through. Peaking on 12 November the Taurids are a relatively slow shower, moving across the sky at about 17 miles per second or 65,000 miles per hour.

The Leonid meteor shower will peak on 17–18 November between midnight and dawn, although they may be visible for much of the month. They are usually one of the more prolific annual meteor showers, with fast, bright meteors associated with Comet Tempel-Tuttle. The radiant (the point where the meteors seem to stream from) is at the head or 'sickle' of the constellation Leo the Lion, hence the name.

Follow our guidelines for meteor observations in the August 2021 edition of this guide.

International Space Station (ISS) forecast time for evening passes visible this month.

Here are the evening (only) passes this month shown on the website now, it is advisable to regularly check the Heavens Above website to check on forecast passes during the month.
[source: https://www.heavens-above.com/]

Date	Mag	Transit time	Start			High point	End		
			Time	Alt.degs.	Az.		Time	Alt.degs.	Az.
20-Nov	-1.5	01:25	18:15	10°	S	16°	18:17	16°	SSE
21-Nov	-1.4	02:22	17:29	10°	SSE	12°	17:31	11°	ESE
21-Nov	-1.1	00:58	19:03	10°	SW	17°	19:04	17°	SW
22-Nov	-2.5	02:42	18:16	10°	SW	31°	18:19	31°	SSE
23-Nov	-2.2	04:16	17:29	10°	SSW	24°	17:33	18°	ESE
23-Nov	-1.3	01:22	19:05	10°	WSW	22°	19:06	22°	WSW
24-Nov	-1.7	04:39	16:42	10°	S	17°	16:47	10°	E
24-Nov	-3.4	03:11	18:18	10°	WSW	52°	18:21	52°	S
25-Nov	-3.0	04:55	17:30	10°	SW	42°	17:35	23°	E
25-Nov	-1.3	01:24	19:07	10°	W	23°	19:08	23°	W
26-Nov	-2.5	06:07	16:43	10°	SW	32°	16:49	10°	E
26-Nov	-3.7	03:15	18:19	10°	WSW	71°	18:23	71°	SSW
27-Nov	-3.5	05:04	17:32	10°	WSW	64°	17:37	26°	E
27-Nov	-1.2	01:19	19:09	10°	W	22°	19:10	22°	W
28-Nov	-3.2	06:38	16:44	10°	WSW	53°	16:51	10°	E
28-Nov	-3.6	03:11	18:21	10°	W	72°	18:24	72°	SW
29-Nov	-3.7	05:04	17:34	10°	W	77°	17:39	28°	E
29-Nov	-1.1	01:14	19:10	10°	W	20°	19:12	20°	W
30-Nov	-3.6	06:46	16:46	10°	WSW	72°	16:53	10°	E
30-Nov	-3.4	03:10	18:23	10°	W	62°	18:26	62°	SW

Phenomena of the month of November *(generated using Coelix Apex software)*:

	Date	Hour	Description of the phenomenon
	yyyy mm dd	hh:mm	
1	2021 11 02	05:59	Close encounter between Mercury and Spica (topocentric dist. center to center = 4.1°)
2	2021 11 03	19:45	Close encounter between the Moon and Mercury (topocentric dist. center to center = 0.3°)
3	2021 11 04	21:15	NEW MOON
4	2021 11 05	22:23	Moon at perigee (geocentric dist. = 358843 km)
5	2021 11 06	17:34	Close encounter between Venus and M 8 (topocentric dist. center to center = 2.9°)
6	2021 11 08	04:59	Close encounter between the Moon and Venus (topocentric dist. center to center = 0.7°)
7	2021 11 09	19:08	Close encounter between the Moon and Pluto (topocentric dist. center to center = 3.4°)
8	2021 11 10	16:18	Close encounter between the Moon and Saturn (topocentric dist. center to center = 5.0°)
9	2021 11 11	12:46	FIRST QUARTER OF THE MOON
10	2021 11 11	22:17	Close encounter between the Moon and Jupiter (topocentric dist. center to center = 4.8°)
11	2021 11 12	00:00	Meteor shower : N. Taurids (5 meteors/hour at zenith; duration = 51.0 days)
12	2021 11 13	23:59	Close encounter between the Moon and Neptune (topocentric dist. center to center = 4.4°)
13	2021 11 17	09:30	Meteor shower : Leonids (15 meteors/hour at zenith; duration = 24.0 days)
14	2021 11 18	04:20	Close encounter between the Moon and Uranus (topocentric dist. center to center = 1.8°)
15	2021 11 19	08:58	FULL MOON (partial eclipse of the Moon partly visible in Perton)
16	2021 11 21	00:00	Meteor shower : Alpha Monocerotids (duration = 10.0 days)
17	2021 11 21	02:14	Moon at apogee (geocentric dist. = 406279 km)
18	2021 11 24	02:57	Close encounter between the Moon and Pollux (topocentric dist. center to center = 2.9°)
19	2021 11 25	07:53	Close encounter between the Moon and M 44 (topocentric dist. center to center = 2.7°)
20	2021 11 27	00:25	Close encounter between the Moon and Regulus (topocentric dist. center to center = 4.4°)
21	2021 11 27	12:28	LAST QUARTER OF THE MOON
22	2021 11 29	04:38	SUPERIOR CONJUNCTION of Mercury with the Sun (geoc. dist. center to center = 0.7°)

PERTON LIBRARY ASTRONOMY GROUP (PLAG)

In the October meeting on Thursday 21 at the library we discussed mobile apps and websites recommended for astronomy. The next meeting will be held on Thursday 18 November and there will be a presentation about the size of the universe.

Numbers may again have to be limited so contact the library and tell them you are interested in attending.

WOLVERHAMPTON ASTRONOMICAL SOCIETY LECTURES

We are continuing with our programme of online lectures and will supplement these with "in person" meetings for astronomical events, so keep an eye on our social media for announcements. We also have regular Monday evening chat nights on Zoom throughout the year, the first 30 minutes for beginners to ask questions, in these sessions we give basic astronomy advice and swap tips, sometimes with a short talk.

Invitations to all talks are emailed to members. For the coming year Wolvas subscription will be only £10 per annum and you can sign up now our website www.wolvas.org.uk

Lectures online will only be available to paid-up members of Wolverhampton Astronomical Society. We continue to try and bring you some of the best speakers around and we have an exciting line up for the coming season. Our programme of speakers for next season 2021/22 has almost been filled.

Lectures for the 2021/22 season:

25/10/21	Prof Ian Morison	Wonders of the Southern Sky
08/11/21	Martin Braddock	Perseverance Rewards the Brave: Mars Exploration & Beyond
22/11/21	Alex Binks	Young Stars in our Backyard
06/12/21	Georgia Pulford	A Brief Geological History of Time
10/01/22	Prof Rene Breton	*Talk to be decided*
24/01/22	Dr Julian Onions	Crazy Interstellar Rockets
07/02/22	Steve Clifton	Astrophotography Then and Now
21/02/22	Mike Frost	Against the Odds: A Patagonian Eclipse
07/03/22	*# not booked yet #*	Annual free public Paul Pope Lecture
21/03/22	Pete Williamson	The Moons of our Solar System
11/04/22	Paul Fellows	Fire & Ice: The Volcanic Worlds of the Solar System
16/05/22	Damian Hardwick	The Life of Albert Einstein
13/06/22	Katrin Raynor-Evans	Exploring Astronomy & Space through Philately

Watch out for updates

As well as our webpage www.wolvas.org.uk we will be posting details of events on social media, so keep an eye on our Facebook (https://www.facebook.com/wolvasuk) and Twitter (https://twitter.com/wolvasuk) accounts for the latest updates and news.