

ARIES reach out to people encouraging observation of astronomical events

Arayabhatta Research Institute of Observational Sciences (ARIES) Nainital an autonomous research institute of the Department of Science and Technology (DST), which is involved in research areas in astronomy & astrophysics and atmospheric sciences has used this time to reach out to people about several interesting astronomical events in the period. ARIES public outreach wing with the help of local print and electronic media are informing people about the relevance of the events and encouraging them to watch them in the clear skies in this period.

Asteroid to pass by earth: 29 April 29, 2020

A rare and important astronomical event is expected to happen on April 29, 2020 -- passing-by of a known nearby asteroid called '(52768) 1998 OR2'. The asteroid is large enough to wreak havoc on Earth, however, on 29th April, the asteroid 1998 OR2 will safely pass by 6.2 million kilometers, i.e., more than 16 times the average distance between the Earth and the moon. The brightness of the asteroid is NOT enough to see through naked eyes. Using suitable telescopes of diameter 6-8 inches it should be possible to identify the object optically. ARIES Science center and local media are working together to educate people and increase awareness about such interesting astronomical events.

1998 OR2, was discovered on 24 July 1998, by astronomers as a part of the Near-Earth Asteroid Tracking program at Haleakala Observatory Hawaii. It is one of the brightest and therefore largest potentially hazardous near-Earth objects known to exist having a diameter of 2–4 kilometers. The closest approach of this asteroid to the Sun is just outside Earth's furthest distance from the Sun. This asteroid has a well-determined orbit, and the trajectory is well known through the year 2197.

Asteroids are small rocky bodies orbiting the Sun, also termed as “minor planets” or “planetoids” and are much smaller than planets. Most of these objects live in the main “asteroid belt,” a region between the orbits of Mars and Jupiter.

Newly discovered Comet ATLAS to be visible: April—May, 2020

Another exciting Astro-event would be the appearance of a Comet C/2019 Y4, also named as named 'ATLAS' in the second half of April 2020. This comet was discovered recently on 28th Dec 2019 in a non-parabolic orbit having an orbital period of around 6000 years. Due to possible recent fragmentation, 'ATLAS' will not be very bright, but it may still be visible to the naked eye in the month of May 2020. Throughout the month of April, the comet will be in the constellation of Camelopardalis. On May 12, it will move into Perseus constellation. It will be at its closest point to Earth on May 23 during a new moon when the comet will be around 17 degrees from the Sun. On May 31, it will be in the Taurus constellation 12 degrees from the Sun, i.e., close to the Sun.

Cosmic fireball: 16-26 April, 2020

Cosmic fireball activity by popular Lyrids meteor shower would be another worth-watching event during the month of April, the first significant meteor shower happening in 2020. Lyrids meteors would be visible in the sky during 16-26 April, reaching to the peak around 21st April 2020. Looking towards north-north-east towards the Lyra constellation from a dark spot in the open sky would make it possible to spot the activity in form of bright meteors and an occasional fireball. The Lyrid meteor shower is known for its bright fireballs, and it is expected to get more than 20 streaks an hour or more during peak conditions. In fact, Lyrids meteor are residuals of the comet Thatcher (Comet C/1861 G1) dust

grains. Every time Earth passes through that stream of dust particles, these dust grains burn up, creating the meteor shower, or shooting stars, as we often refer to them.

Supermoon: 7-8 April 2020

ARIES developed an awareness of another fascinating and spectacular event which occurred on 7-8 April 2020. -- the 'Supermoon.' The event 'Supermoon' happens when the full moon/new moon coincides with the moon's closest approach to Earth in its orbit called 'Perigee' as moon's orbit around the Earth is not a perfect circle. This event makes the moon appear a little brighter and closer than normal, though the effects are hard to spot with the naked eye. It is also relevant to mention that the phenomenon of full moon is well-studied and using ephemeris and several online web-tools, one could easily know about the occurrence in a year.

So, during the 'Supermoon' phase observed on 7-8 April 2020, the angular diameter of the moon was nearly 7% bigger than that of an average-size full moon, and about 14% bigger than the angular diameter of year's most distant full moon. Around 18:00 UT on 7th April 2020, the lunar perigee distance was as close as 356,909 km. The 07 April full moon was one of the season's first three full moons falling between the March equinox and the June solstice during 2020. This event was observed clearly throughout the country by the general public and amateur astronomers.

The April "Supermoon" is also known as "Super pink-moon" in North America as early springtime bloom certain wildflower native to eastern part called PHLOX SUBULATA commonly called creeping phlox or moss phlox. The next year's biggest super-moon will appear on 26th May 2021, closest alignment between full moon and lunar perigee having distance of around 357,310 km.



Fig 1: Two images of the "Supermoon" captured by DSLR camera by an amateur astronomer Rajiv Dubey from Nainital on 7th and 8th April 2020.

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