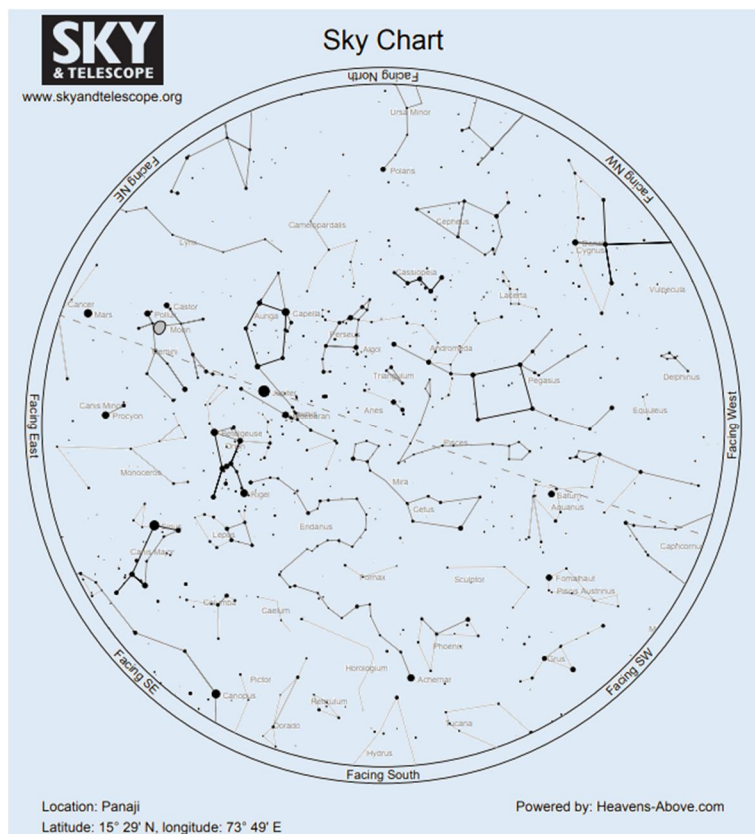




ASTRONOMY OF THE MONTH

November NIGHT SKY



In month of November, we can see core of the milky way setting in west direction in early evening and Orion arm of milky way rising later in Night.

Usually rain subsides and beginning of clear skies for astronomers in Goa. But this year it might not be case due to prolonged monsoon.

For astrophotographers this is time to click some object in and around Cygnus constellation.

1. Andromeda Galaxy
2. North America Nebula
3. Elephant Trunk Nebula
4. Triangulum Galaxy
5. Double cluster in Persius

New Moon : 20th November

Full Moon : 5th November

ASTRONOMICAL EVENTS

Moon Saturn Conjunction

The Moon and Saturn will share the same right ascension, with the Moon passing 3°39' to the north of Saturn. The Moon will be 12 days old.

Taurids Meteor Shower: The Taurids produce only about 5-10 meteors per hour. It consists of two separate streams. The first is produced by dust grains left behind by Asteroid 2004 TG10. The second stream is produced by debris left behind by Comet 2P Encke. It peaks this year on the night of November 4 and the morning of the 5th. Moon will be in its full glory making it difficult to spot meteor

Full Moon, Supermoon.

The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. The Moon will be near its closest

approach to the Earth and may look slightly larger and brighter than usual.

Leonids Meteor Showers: The Leonids is an average shower, producing up to 15 meteors per hour at its peak. The Leonids is produced by dust grains left behind by comet Tempel-Tuttle, which was discovered in 1865. The shower runs annually from November 6-30. It peaks this year on the night of the 17th and morning of the 18th. The crescent moon will set before midnight leaving dark skies for what should be a great early morning show. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Leo

Saturn ends retrograde motion

Saturn will reach the end of its retrograde motion, ending its westward movement through the constellations and returning to more usual eastward motion instead.



ASSOCIATION OF FRIENDS OF ASTRONOMY GOA PUBLIC ASTRONOMICAL OBSERVATORY

(Under Dept. of Sc., Tech., Waste Mgmt., Govt. of Goa)



Visibility of Planets for the month of November.

Planet Name	Visibility Start	Visibility Ends
Venus	After 5:30	Till Sunrise
Saturn	After Sunset	Till 2:30AM
Jupiter	After 10:30 PM	Till Sunrise

PAO Panaji : Public Astronomical Observatory at Junta House, Panjim will be open for public on all weekdays (Monday to Saturday) from 14th November onwards at 7:00PM to 9:00 PM

PAO Margao : Public Astronomical Observatory at Ravindra Bhavan, Margao will be open for public on Tuesdays and Saturdays from 14th November onwards at 7:00PM to 9:00 PM

For more information about PAO and AFA you can contact
Satish Nayak (9518502404) or
Gaurav Dhumatker (9923544025)

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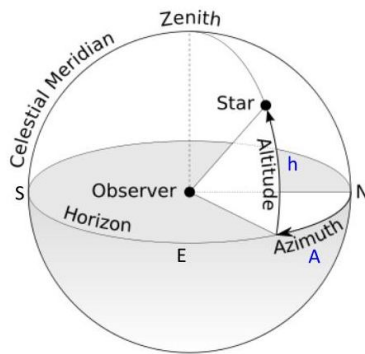


Celestial Coordinate System

The celestial coordinate system is a method astronomers use to locate objects in the sky, with two of the most common systems being the Altitude-Azimuth (Alt-Az) and the Right Ascension-Declination (RA-Dec) systems. These systems provide different ways of specifying positions of celestial bodies relative to the observer or celestial sphere.

Altitude-Azimuth system

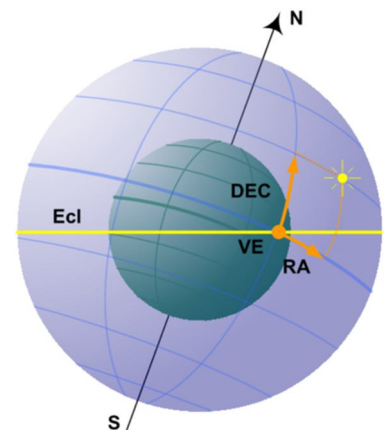
The Altitude-Azimuth system is a horizontal coordinate system based on the observer's local horizon. Altitude (Alt) measures how high an object is above the horizon, in degrees from 0° at the horizon to 90° at the zenith (directly overhead). Azimuth (Az) measures the compass direction along the horizon, starting from North at 0° , increasing clockwise through East at 90° , South at 180° , and West at 270° . This system is intuitive for locating objects at a given time and place but changes with the observer's location and the Earth's rotation, so the coordinates of an object vary over time and differ for different observers. This makes Alt-Az useful for immediate observations, such as aiming a telescope in the sky from a specific spot at a specific time.



the celestial sphere, analogous to the Earth's longitude and latitude but projected onto the sky.

Declination (Dec) measures an object's angular distance north or south of the celestial equator, ranging from $+90^\circ$ at the North Celestial Pole to -90° at the South Celestial Pole.

Right Ascension (RA) measures the eastward angular distance along the celestial equator from the vernal equinox, expressed in hours, minutes, and seconds, with 24 hours corresponding to a full 360° rotation (so 1 hour RA equals 15°). RA-Dec coordinates remain nearly fixed regardless of the time or location of observation, making this system ideal for cataloging and star tracking across the globe.



Conversion between these systems is possible but requires knowledge of the observer's location and the current time to relate fixed celestial coordinates to the horizon-based Alt-Az system.

By **Gaurav Dhumatker**

Right Ascension-Declination system

Right Ascension-Declination system is an equatorial coordinate system fixed relative to