



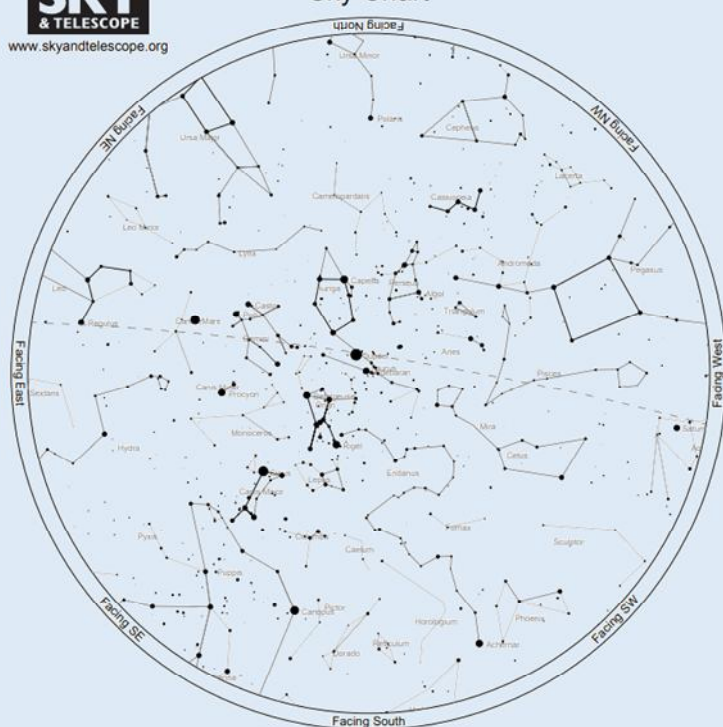
ASTRONOMY OF THE MONTH

DECEMBER NIGHT SKY



www.skyandtelescope.org

Sky Chart



Location: Panaji
Latitude: 15° 29' N, longitude: 73° 49' E
Time: 2024 December 22, 23:00 (UTC +05:30)

Powered by: Heavens-Above.com

In month of December, we can see Orion arm of the milky way rising in East direction in evening.

Rainy season is over and sky becomes clear for astronomers in Goa. Astronomers can take out their equipment and do Observation and Photography

For astrophotographers this is time to click some object in Orion arm of Milky way.

1. Orion Nebula
2. Horsehead Nebula
3. Flame Nebula
4. Andromeda Galaxy
5. Pleiades

New Moon : 1st December

Full Moon : 15th December & 31st December

ASTRONOMICAL EVENTS

Jupiter at Opposition

The giant planet will be at its closest approach to Earth on 7th December and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. This is the best time to view and photograph Jupiter and its moons. A medium-sized telescope should be able to show you some of the details in Jupiter's cloud bands. A good pair of binoculars should allow you to see Jupiter's four largest moons, appearing as bright dots on either side of the planet.

Pleiades Occultation

On 13th December Moon will cover an Open cluster of star in Taurus Constellation. This cluster is called Pleiades also known as Krutika Nakshatra.

Geminid Meteor Shower

The Geminid meteor shower will be active from 7 December to 17 December, producing its peak rate of meteors around morning of 14 December.

At its peak, the shower is expected to produce a nominal rate of around 120 meteors per hour. The shower will peak close to full moon, and so moonlight will not allow us to view fainter meteors.

December Solstice

The December solstice occurs on 21st December at 09:17 UTC. The South Pole of the earth will be tilted toward the Sun, which will have reached its southernmost position in the sky and will be directly over the Tropic of Capricorn at 23.44 degrees south latitude. This is the first day of winter (winter solstice) in the Northern Hemisphere and the first day of summer (summer solstice) in the Southern Hemisphere.



IMPORTANT EVENTS OF AFA GOA

7th December :

- Astro club 25, at Panaji Observatory.

12th December :

- Film screening and sky observation at Mapusa.

21st December :

- Winter Solstice, longest night of the year.

Visibility of Planets for the month of November.

Planet Name	Visibility Start	Visibility Ends
Venus	After Sunset	Till about 8:45PM
Saturn	After Sunset	Till Midnight
Jupiter	After 6:00 PM	Till 6:00AM
Mars	After 10:00PM	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 16th 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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ASSOCIATION OF FRIENDS OF ASTRONOMY GOA PUBLIC ASTRONOMICAL OBSERVATORY

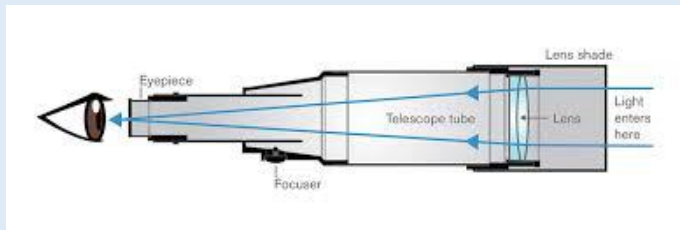
(Under Dept. of Sc., Tech., Waste Mgmt., Govt. of Goa)



TELESCOPES AND MOUNTS (PART 2)

TYPES OF TELESCOPES

Telescopes are fascinating instruments used to observe distant objects by collecting and magnifying light. There are three primary types: refracting, reflecting, and catadioptric.



Refracting telescopes or refractors, use lenses to bend (refract) light. The primary lens, called the objective, gathers light and brings it to a focus to form an image. A secondary lens, the eyepiece, magnifies this image. Refractors are known for their sharp and high-contrast images, making them ideal for viewing planets and the moon. However, they can suffer from chromatic aberration, where different colours focus at different points, causing a fringe of colours around objects.

Reflecting telescopes, or reflectors, use mirrors instead of lenses. The primary mirror collects light and reflects it to a focal point. A secondary mirror then directs the light to an eyepiece or camera. Reflectors are free from chromatic aberration and can be made larger than refractors, allowing them to gather more light and view dimmer objects. They

are popular for deep-sky observations of galaxies, nebulae, and star clusters.



Catadioptric telescopes combine lenses and mirrors to form images. The two main types are Schmidt-Cassegrain and Maksutov-Cassegrain. These telescopes are versatile, offering the benefits of both refractors and reflectors. They are compact, portable, and provide excellent image quality, making them suitable for a wide range of astronomical observations.

By **Gaurav Dhumatker**





What would happen if the sun disappeared suddenly from our solar system?

This is a very interesting question and when it comes to astronomy and astrophysics, its answer becomes more interesting too!

First, we have our solar system. Everything normal and the planets and asteroids revolving around the sun in their respective. As of the present astronomical research and data, we know that light travels at a constant speed of $3 \times 10^8 \text{ ms}^{-1}$ which makes it the fastest object in the universe but when it is compared in Universal scale, this speed seems to be very slow that it takes 104 years for the light to travel from one end of our Milky Way Galaxy to the other. Now, as the sun's mean distance from earth is 149 million km because of which light takes 8 mins and 20 secs to reach us from the sun.

According to Sir. Albert Einstein, we know that space exists in a 4-dimensional curve or a mesh which we generally call the Space-time fabric. According to the results of Einstein's special theory of relativity we know that Gravity is nothing but a curvature made by an object in the 4 dimensional space-time mesh (greater is the mass, greater the curvature) and the intensity factor also travels same as the speed of light. As our Sun is the center of our solar system which shares 99.86% of the total mass of our solar system due to which the other objects revolve around the sun.

Now, if the sun somehow disappears suddenly then we will not feel the absence of the sun for 8 mins and 20 secs which means we will still see the Sun from the Earth for 8 mins and 20 secs . As the speed of gravity is also equal to the speed of light, the earth will still keep revolving around the Sun for 8 mins and 20 secs and after that the Earth will leave its orbit and will continue to move tangentially in its path in the



Universe. All the planets which were revolving in their respective orbits will start to move in a random trajectory. As Jupiter and Saturn are the first and the second biggest planets in our solar system, they will start attracting other objects in the solar system which will lead to a very huge chaos. As the sun's heliosphere (A boundary created by suns magnetic field which protects the solar system from outer Cosmic Microwave Background Radiation) will also disappear, the CMBRs will enter the solar system which may lead to huge destructions

By Rehan Khan.
Sancoale





AFA EVENTS OF NOVEMBER 2024



Rosary Higher Secondary School



Benaulim Beach- Tripurari Pornima



Reopening of Observatories



Hon. DGP of Goa visits to the Public
Astronomical Observatory at Panjim