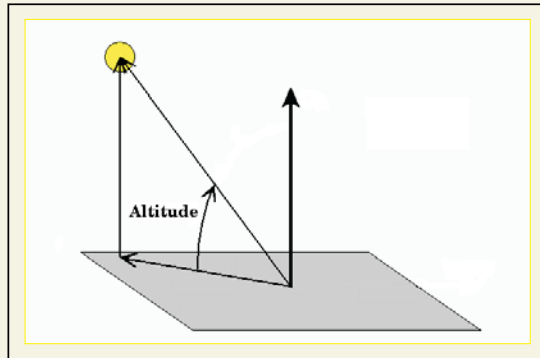


Unnatamsa

Relevant Celestial Co-ordinates

Unnatamsa can measure the **Altitude** of a celestial object.

The angular height of an object, from the **Horizon**, is the **Altitude**.



The large graduated brass circle hung from the supporting beam, is the measuring instrument of the Unnatamsa.

The brass circle is pivoted to rotate freely around a vertical axis. The ring has two cross beams in the vertical and horizontal directions. A sighting tube is pivoted at the centre of the circle, which can be moved in the vertical direction, to align towards any celestial object.

The vertical movement of the sighting tube and the horizontal rotation of the brass ring are adjusted to sight the celestial object. This pivoting of the Unnatamsa is analogous to the Alt-Az mounting of a modern day telescope.

The rim of the brass circle has graduations marked in such a way that smallest division is a tenth of a degree. The larger divisions of 1 degree and of 6 degrees are also marked on the circle. After sighting the celestial object, its Altitude can be read from the position of the pointer of the sighting tube against the graduations on the rim of the circle.

It would be possible to obtain the Altitude of the Sun with this instrument, without directly sighting the Sun. One needs to look at the shadow of the circle and the sighting tube, while aligning the instrument towards the Sun. When the shadows are the shortest, the circle and the sighting tube are aligned towards the Sun, and the Altitude of the Sun can be measured in this way.

References

1. The instruments of the Jantar Mantar Observatory, Jaipur
2. Sawai Jai Singh and His Astronomy, by Virendra Nath Sharma, Motilal Banarsidass Publishers.

Calibration work in progress by Nehru Planetarium, New Delhi