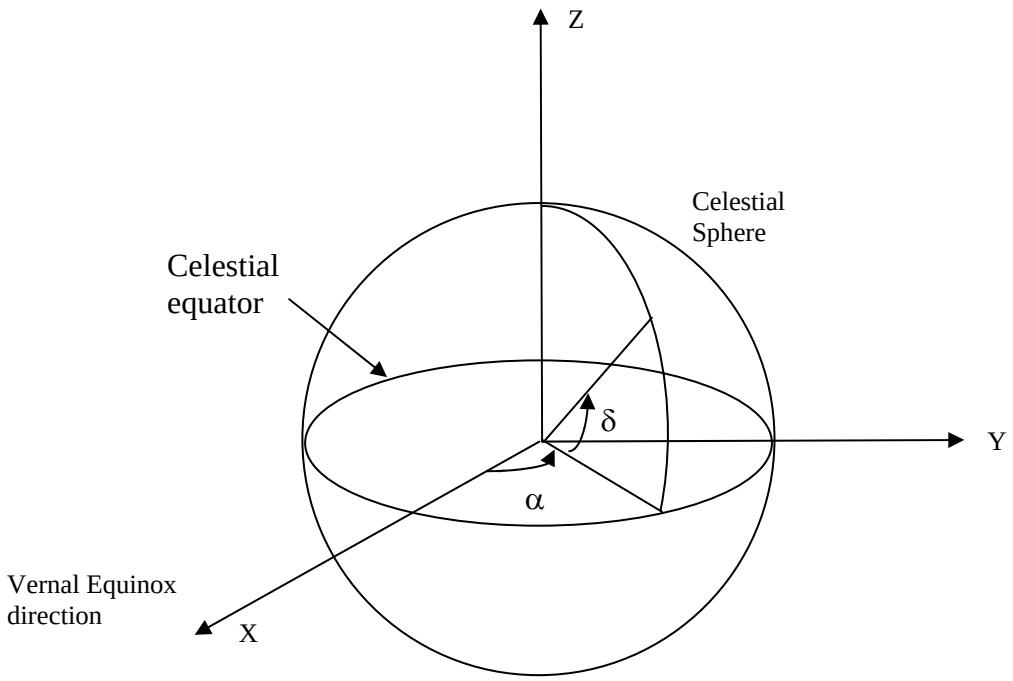


Right Ascension-Declination Coordinate System

Origin → Earth

XY plane → Celestial equator (fundamental plane)

Positive X axis → In the direction of vernal equinox

Positive Y axis → To the east of the vernal equinox

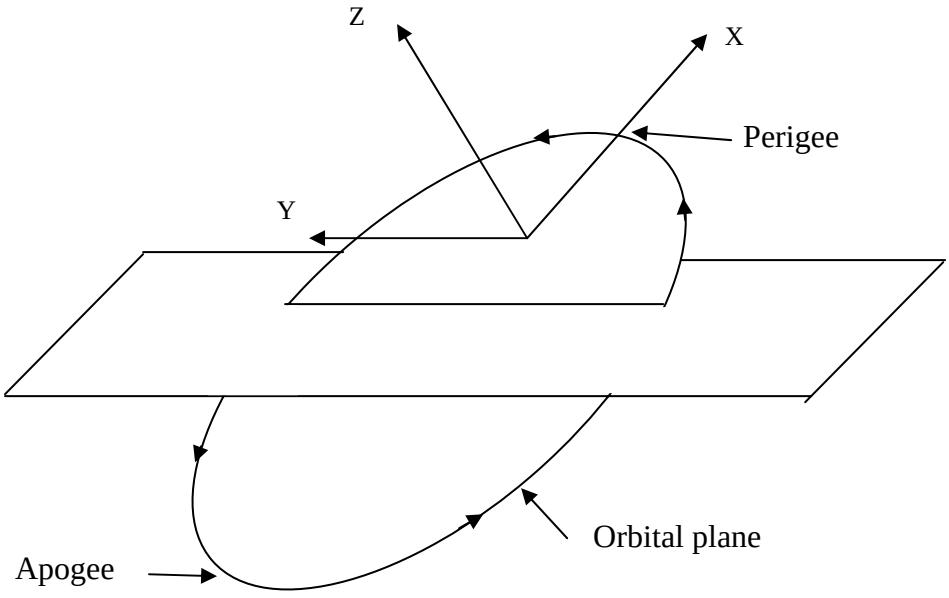
Positive Z axis → In the direction of the north pole

An object is described by:

α → Right ascension

δ → Declination

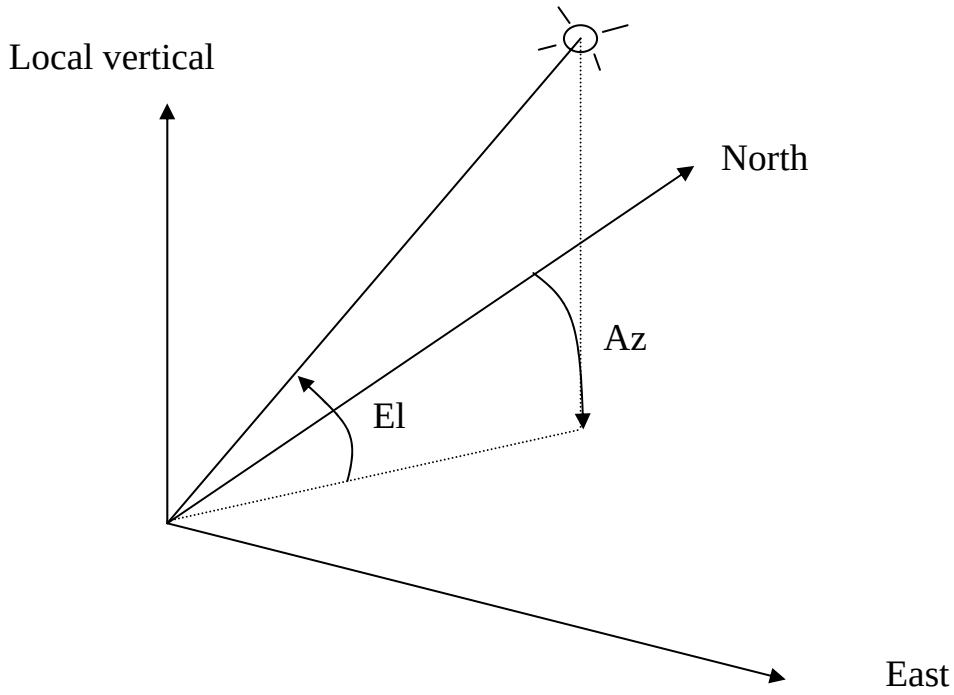
Perifocal Coordinate System



Fundamental plane	→	Plane of satellite motion
Origin	→	Geocentre
X axis	→	Direction of perigee
Y axis	→	90o in the direction of satellite motion
Z axis	→	Direction to complete the right handed coordinate system.

Celestial horizon Coordinate System

The coordinates of a satellite from a point on the surface of the earth are determined using the celestial horizon coordinate system.



Coordinates of a point on Earth

Latitude → Angle between the equatorial plane and a line joining the point to the geocentre.

Longitude → Related to the great circle (Meridian) containg the north-south axis of the earth on which the point lies. Reference Meridian is at Greenwich Observatory in England.

Orbital Parameters

1. Semi-major axis “a”
2. Eccentricity “e”, which shows the ellipticity of the orbit
3. The inclination “i” The angle between the plane od the orbit and the equatorial plane measured at the ascending node in a northward direction.
4. The right ascension of the ascending node (Ω).
5. The argument of perigee (ω).
6. Time of perigee (t_p).