



Figure 113. The celestial sphere, equatorial plane, ecliptical plane, latitude, longitude, spring equinox and fall equinox

- (A) The axis of the earth's rotation (see radius vector in Fig. 113) moves approximately along the cone whose angle at its vertex equals about $20^\circ 27'$ (in 1900 A.D.). In Fig. 113 this is the angle between ON and OP . This motion is called "precession" and its velocity is about $50''$ per year. A complete revolution (rotation) of the axis ON requires about 26,000 years. Consequently, the equatorial coordinate system and the axis of the equinox have a precession which induces the precession of the longitudes (see the indicator C in Fig. 113). If we fix some star (without proper motion) on the celestial sphere, then its equatorial longitude α is the function $\alpha(t)$ of t , corresponding to approximately uniform motion along the circle parallel to the ecliptic.
- (B) The earth's axis has smaller oscillations (the so-called nutations) as well as precession, but the maximum amplitude of these oscillations does not exceed $17''$.