

55.1: Precession

The Earth's rotation axis is currently oriented so that the north axis points near the direction of the star Polaris (α Ursæ Minoris, sometimes called the "North Star"). The north axis has not always pointed toward Polaris, though; the Earth's rotation axis actually moves in a big circle (of radius 23.5°) with a period of about 26,000 years; this motion is called precession. The precession is caused by the gravitational pull by the Moon and Sun on the Earth's equatorial bulge.

Because of precession, the "North star" is different stars at different times. While it is now Polaris, in ancient times (c. 3000 B.C.) the "North star" was the star Thuban (α Draconis). In the distant future, the north rotation axis will be near other stars: it will be near Deneb (α Cygni) in A.D. 10,000, and near the very bright star Vega (α Lyræ) in A.D. 14,000. Figure 52.1 shows a star chart with the direction of the Earth's north pole over time.

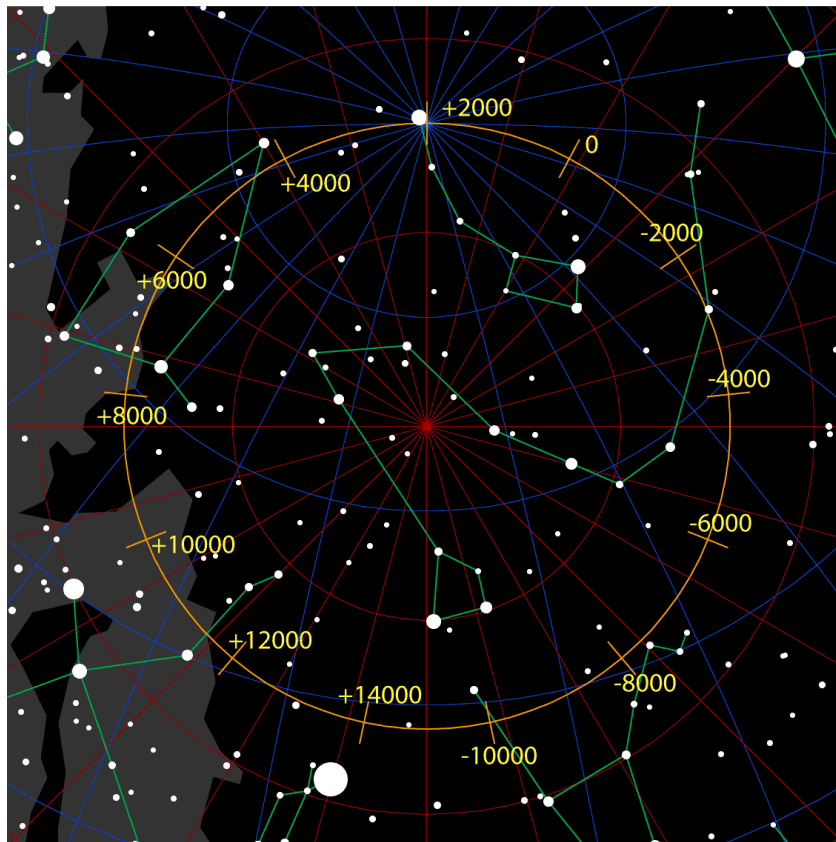


Figure 55.1.1: Star chart showing the direction of the Earth's north pole for different years. The movement is due to precession of the Earth's axis, and has a period of about 26,000 years. (Credit: Tau 'olunga, Wikipedia.)

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