

*A Brief Column for the Beginning Stargazer Introducing a New Astronomical Term Each Month*

**A**stronomy is rich with terminology. This column will help beginning stargazers ease into the world of astronomy by *briefly introducing* a new but *basic astronomical term* (word, acronym or abbreviation) each month. This list, which began January 1999 with the letter *a*, is alphabetical but uses successive letters for each month's entry. (We will return to the letter *a* after twenty-six months.)

**Word of the Month for June 2000**

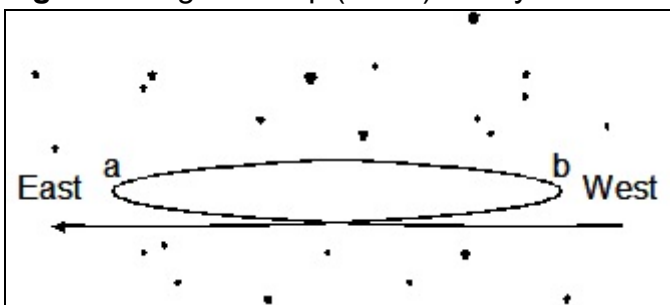
**retrograde 1.** Apparent motion of a celestial object from *east to west* with respect to the stars on the celestial sphere (sky).

**Note:** Retrograde means “backwards” or opposite from the usual. The antonym of retrograde is *prograde* or *direct*.

For example, all planets including the Sun and the Moon have, normal or *prograde* motion on the sky. These objects appear to move on the sky *west to east* with respect to the stars.

However, all planets (*excluding the Sun and the Moon*) occasionally appear to move on the sky from east to west with respect to the stars, i.e., “backwards” or *retrograde*. (See Figure 1.)

**Fig. 1.** Retrograde loop (a to b) on sky

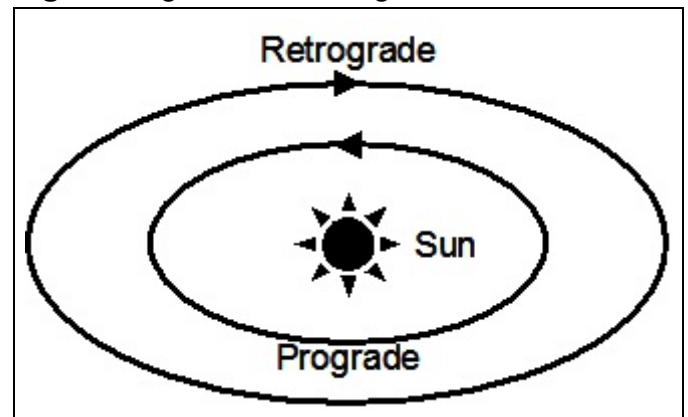


(The explanation of this puzzling apparent motion of the planets on the sky occupied human thought from ancient times into the seventeenth century.)

**2.** Orbital motion or axial rotation in the solar system that is *clockwise* as observed from north of the Earth's orbital plane. (See Figure 2.)

None of the nine major planets in the solar system

**Fig. 2.** Prograde and retrograde orbits



have *retrograde orbits*. That is, their orbits are *prograde*. Asteroids typically have prograde orbits also. However, retrograde orbits are common among many small planetary satellite and comet orbits. (The only large planetary satellite that orbits retrograde is Neptune's *Triton*.)

However, several planets have *retrograde rotation*, namely, Venus, Uranus and Pluto. (Orbital inclinations of these planets have values between 90 and 180 degrees.) ☼

References. J. Mitton 1991, *Concise Dictionary of Astronomy* (Oxford Univ. Press); I. Ridpath 1997, *A Dictionary of Astronomy* (Oxford Univ. Press).