

Solar apex

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The **solar apex**, or the **Apex of the Sun's Way**, refers to the direction that the Sun travels with respect to the Local Standard of Rest. This is not to be confused with the Sun's apparent motion through the constellations of the zodiac, which is illusory – this supposed motion is actually caused by the Earth revolving around the Sun.

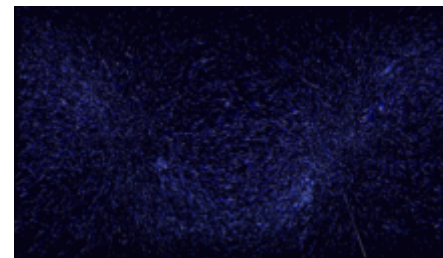
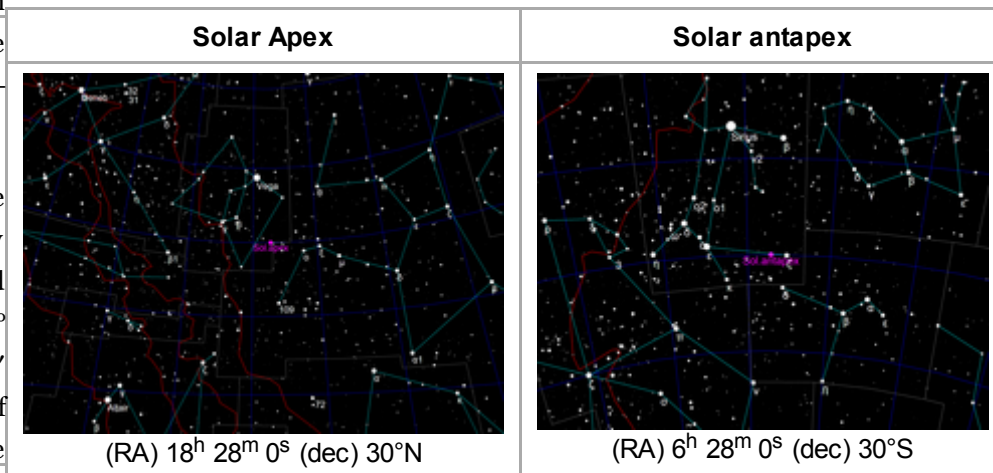
The solar apex is in the constellation of Hercules, southwest of the star Vega.^[1] There are several coordinates for the solar apex. The visual coordinates (as obtained by visual observation of the apparent motion) is right ascension (RA) 18^h 28^m 0^s and declination (dec) of 30° North (in galactic coordinates: 56.24° longitude, 22.54° latitude). The radioastronomical position is RA 18^h 03^m 50.2^s and dec 30° 00′ 16.8″ (galactic coordinates: 58.87° longitude, 17.72° latitude). The evaluation of movement of Solar system within local neighborhood is involved, look at Talk page for some actual links.

For more than 30 years prior to 1986 the speed of the Sun towards the solar apex was taken to be about 20 km/s^[2] but more recent results give a smaller velocity component in the direction toward galactic longitude 90°, reducing the speed to about 13.4 km/s.^[3] This speed is not to be confused with the orbital speed of the Sun around the Galactic center, which is about 220 km/s and is included in the movement of the Local Standard of Rest. Thus the Sun gains distance towards the apex at about 1/13 its orbital speed. The sun's motion in the Milky Way is not confined to the galactic plane; it also shifts ("bobs") up and down with respect to the plane.^[4]

The nature and extent of the solar motion was first demonstrated by William Herschel in 1783, who also first determined the direction for the solar apex to Lambda Herculis, only 10° away from today's accepted position.^{[5][6][7]}

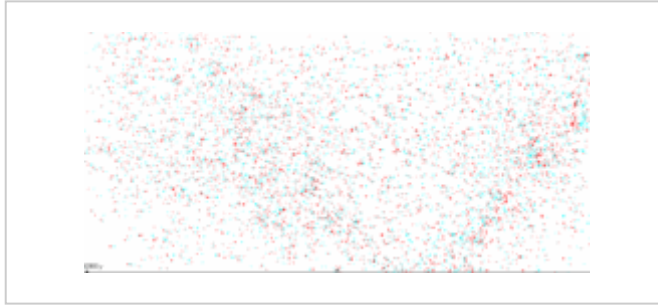
The **solar antapex**, the direction opposite of the solar apex, is located near the star Zeta Canis Majoris.^[1]

Gallery

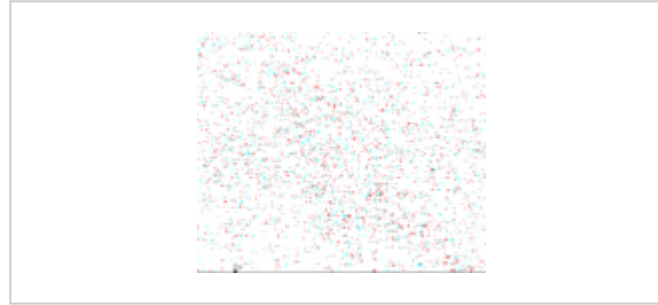


The movement of stars of spectral classes B and A around the apex (left) and antapex (right) in ± 200 000 years.

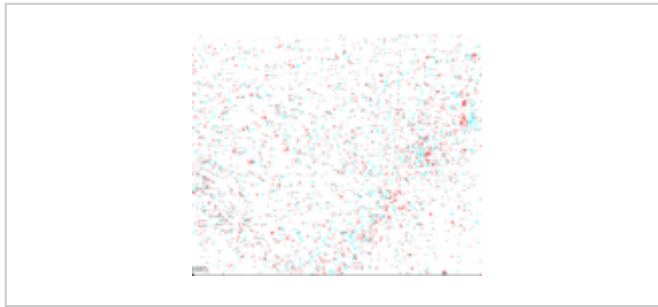
Animations of star motions around apex and antapex



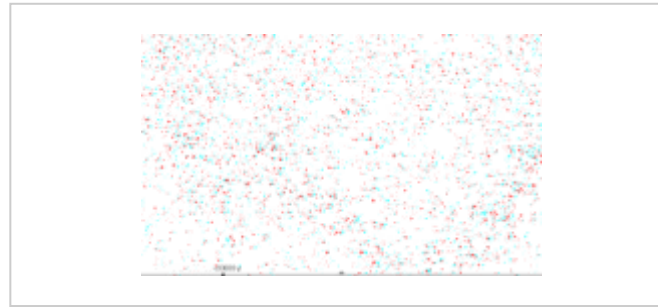
The movement of stars around the apex (left) and antapex (right) in $\pm 500\,000$ years. To view this picture you need 3D glasses (red-green or red-blue).



The movement of stars around the apex. To view this picture you need 3D glasses (red-green or red-blue).




The movement of stars around the antapex. To view this picture you need 3D glasses (red-green or red-blue).



The movement of stars between apex and antapex. To view this picture you need 3D glasses (red-green or red-blue).

References

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