

How does the Sun rotate at the equator?

On the surface, the Sun rotates slowly at the poles and quickly at the equator. This profile extends on roughly radial lines through the solar convection zone to the interior. At the tachocline the rotation abruptly changes to solid-body rotation in the solar radiation zone.

How many days is a solar rotation?

Solar rotation is taken to be 27.2753 days (see below) for the purpose of Carrington rotations. Each rotation of the Sun under this scheme is given a unique number called the Carrington Rotation Number, starting from November 9, 1853.

Which latitude is a prograde solar rotation?

This chosen period roughly corresponds to the prograde rotation at a latitude of 26° north or south, which is consistent with the typical latitude of sunspots and corresponding periodic solar activity. When the Sun is viewed from the "north" (above Earth's north pole), solar rotation is counterclockwise (eastward).

Does solar rotation vary with latitude?

Solar rotation varies with latitude. The Sun is not a solid body, but is composed of a gaseous plasma. Different latitudes rotate at different periods. The source of this differential rotation is an area of current research in solar astronomy.

What is a full synodic rotation of the Sun?

A full synodic rotation of the Sun (27.2753 days) is now known as a Carrington Rotation. In the late 19th century, an expression for the differential rotation began to emerge, e.g., see Adams (1911), Belopolsky (1933).

Which direction does the Sun rotate if viewed from the North Pole?

When the Sun is viewed from the "north" (above Earth's north pole), solar rotation is counterclockwise (eastward). To a person standing on Earth's North Pole at the time of equinox, sunspots would appear to move from left to right across the Sun's face.

The coronal rotation rate is a key parameter for solar-wind models, and variations of up to a degree per day or more can lead to large systematic errors over ...

Solar rotation refers to the rotational motion of a star, such as the Sun, around its axis. This rotation can be observed through the movement of sunspots and the spectral lines in the star's spectrum. ... Yet, it gives the order of magnitude of the solar wind large-scale turbulent energy that is feeding the turbulent cascade. In the following ...

The solar rotation allows these plasmas with varying speeds to become radially aligned and interact (e.g., Gosling and Pizzo, 1999). This interaction creates a compression zone that rotates around the Sun and can magnify to cause shocks that accelerate particles. ... The majority (76%) of large SEP events are associated with M & X classes of ...

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The main theories of solar rotation are critically reviewed. The interaction of large-scale convection with rotation gives rise to a transport of angular momentum towards the equator and therefore to differential rotation with equatorial acceleration. (Large-scale...

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Solar rotation (?) is a key property of the Sun as it is may be influenced by large-scale internal circulation, the impact of the solar wind and processes in the heliosphere [4].

Fig. 1. Coronal magnetic field, wind velocity, and rotation rate at three illustrative moments of the solar cycle (from left to right: solar minimum, maximum, and decay phase, corresponding to instants $t = 0, 3.8,$ and 4 yr in Fig. 3 of Pinto et al. 2011).The left halves of the panels show meridional slices of the wind speed (sonic Mach number from 0 in solid blue to 2 ...

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Differential solar rotation has been thoroughly investigated for the past 15 years, resulting in valuable findings. No cohesive picture of the global solar dynamics has yet been ...

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