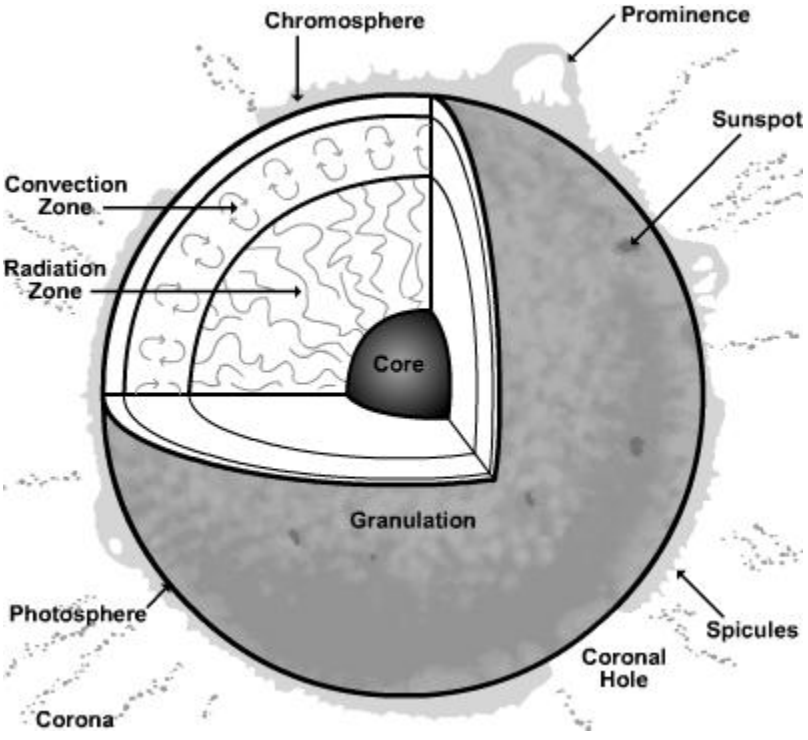
Sunspots Magnetic Field

Abstract

Lower sunspot temperature means lower entropy which implies polarization, and so, sunspots are areas of polarized (circular or elliptical) photons, which explain their magnetic nature.

The structure of the Sun consists of the central *Core* followed by the *Radiation zone* and the *Convection zone*. Next are the *Photosphere* and the *Chromosphere* near the surface; and the *Corona*, the atmosphere of the Sun, above the surface. The core contains about 40 percent of the Sun's mass in 10 percent of the volume. The escape speed for the surface of the Sun is 618 km/sec.



Our Sun is one of the 100 billion stars in our galaxy, with a 1.4 million km diameter and a core temperature of 15.6 million K. The photosphere, as the name implies, consists of photons of natural visible light, mostly unpolarized. It is sprinkled with small dark, relatively cool areas called sunspots, which are regions of strong magnetic field on the photosphere. Sunspot temperature is 4000 K compared to 6000 K elsewhere in the photosphere. Sunspot magnetic field is about thousand times stronger than the photosphere average.

Sunspots occur in pairs, above and below the sun's equator, and have magnetic fields pointing in opposite direction. They appear dark because they are about 2000 K cooler than the neighboring solar surface. Their size varies from 16 km to 160,000 km. The average size is the same as the Earth. The lifespan is a few hours to several months.

Lower sunspot temperature means lower entropy which implies polarization, and so, sunspots are areas of polarized (circular or elliptical) photons, which explain their magnetic nature.

Circular (or elliptical) polarized light acts as a magnet upon interaction with matter. This is the 'inverse Faraday effect' (IFE). This behavior can be explained with the help of a mathematical analysis and also by using a simple graphical approach [1].

In a similar manner the magnetic field of a neutron star is due to circular or elliptical polarized neutrons and that of a black hole because of circular or elliptical polarized Planck and dark photons [2].

REFERENCES:

[1] Rajpal K L, Circular Polarization, Graphical Representation, 2013.

http://vixra.org/pdf/1303.0178v1.pdf

[2] Rajpal K L, Wave Particle Paradox and Evans Photomagneton, 2013.

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