



On the influence of the solar differential rotation on the heliospheric magnetic field

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The form of the field lines of the interplanetary magnetic field (IMF) is determined by the rotation of the Sun. In combination with the fact that the IMF is frozen into the solar wind, this leads to the well-known Parker spiral. While Parker's model has been verified by numerous in-situ measurements in the ecliptic plane, the question arises about the latitudinal variation of the spiral. An essential point here is the differential rotation of the Sun of about 25 days in equatorial region and more than 30 days at higher latitudes. The Ulysses mission offers the unique opportunity to investigate this question by providing solar wind and magnetic field data at high latitudes as well as larger distances from the Sun. Thus, we compare the Parker angle derived from magnetic field data with the "nominal" one, computed with the respective Solar wind velocity. The analysis shows a considerably better agreement between the two angles assuming a differential rotation of the Sun rather than a rigid one, but also significant deviations in the ecliptic plane at larger distances from the Sun.