

## **ASYMMETRY OF THE HELIOSPHERIC CURRENT SHEET DURING THE THREE ULYSSES FAST LATITUDE SCANS**

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Ulysses observed the downward shift of the average location of the heliospheric current sheet (HCS) during its first fast latitude scan in 1994-1995. According to HMF observations at 1AU, this was subsequently found to be a regular pattern, now called the bashful ballerina whereby the HCS is shifted southward during roughly three years at the late declining to minimum phase of every solar cycle. Here we study the structure and location of the HCS during the three fast latitude scan passes of Ulysses in 1994-1995, 2000-2001 and 2007. We find that the HCS was very different during these three passes. While the HCS was restricted to a very narrow latitude range of less than 20 degrees in 1994-1995 indicating well developed polar coronal holes and latitudinal HMF polarity ordering, the HCS region covered a much wider latitude range of more than 30 degrees in 2007. Also, in 1994-1995 there was only one major HCS crossing, while in 2007 Ulysses passed through an intense HCS three times. During the maximum time pass in 2000-2001 the dominance of the HMF field polarity was seen to change from the southern field polarity dominance to northern already at -40 degrees of latitude. Despite the differences in HMF intensity and HCS location during the two minima, the main HCS crossings were detected to occur below the solar equator, giving additional evidence for the validity of the bashful ballerina property during both minimum time fast latitude scan passes.

Heliospheric current sheet, Ulysses, Bashful ballerina

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