SOHO-Ulysses Coordinated Studies During the Two Extended Quadratures and The Radial Alignment of 2007-2008

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SOHO-Ulysses Quadratures

During quadrature, plasma seen on the limb of the Sun, along the radial direction to Ulysses, by SOHO or STEREO can be sampled as it later passes Ulysses. The figure shows a coronagraph image, the radial towards Ulysses at 59° S, and the SOHO/UVCS slit positions during one set of observations. A CME sub-sequently occurred and passed Ulysses (at 3.4 AU) 15 days later.

Quadrature Geometry, winter 2007 and winter 2008

2. Winter 2008: Ulysses will be within ±10° of the limb for ≈ FIVE MONTHS, from 2 December 2007 to 28 May 2008.
3. The Sun will complete ~6 full rotations over each of these intervals.

STEREO

STEREO A/B were launched in October 2006 and, soon after, begin moving away from Earth at ~22° per year. The figure at the right shows the locations of STEREO A/B approximately ONE and TWO years after launch. This will be towards the end of the two extraordinarily long quadrature intervals. The winter 2008 quadrature will occur far enough into the next rise in the solar cycle that there will be a significant amount of high-latitude activity.

Voyagers 1/2

Voyager 1 passed the termination shock in December 2005. Voyager 2 is expected to do the same within the next few years. The latitude and radius of Ulysses and Voyagers 1/2 are shown here.

Sample Result; Winter 2007

The prominence here briefly disappeared as the Morton wave passed over it.

Relative positions of Earth/ACE/WIND/SOHO and STEREO A/B. The longitudes and latitudes are in heliographic coordinates. The plots run from 1 Jan 2007 through 30 May 2008. The Uranus plots appear 'jagged' because the radius value is only given to two significant figures after the decimal at the GSFC web site used for the orbits.

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