



## **Extremely long baseline interplanetary scintillation measurements of solar wind direction**

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Multi-site observations of Interplanetary Scintillation (IPS) provide a unique view of the evolving solar wind outside the field of view of coronagraphs and inside the distances currently covered by in-situ measurements. Long-baseline IPS measurements can be used to obtain an indication of the existence of off-radial meridional flow in the solar wind (e.g. the EISCAT measurements reported by Moran et.al., *Annales Geophysicae* 16(10), 1998). In this paper we report the results of combined IPS measurements from the EISCAT and MERLIN systems made in 2002 and 2004 with baselines of up to 2000 km. These extremely long baselines greatly increase the sensitivity of the experiment to variations in solar wind speed and meridional direction. The results of the 2004 observations suggest that the fast solar wind is expanding slightly super-radially (by a few degrees from radial) at distances of  $\sim 80$  solar radii and that there may be a difference of a few degrees between the meridional directions of the fast and slow winds. The 2004 EISCAT-MERLIN campaign results provide the most accurate indication of solar wind direction in the inner heliosphere (and thus of the large-scale configuration of the solar magnetic field at these distances) and, as such, are of great importance in understanding the large-scale structure of the solar wind. We discuss the possible implications of these results and go on to describe an expanded programme of measurements to be run in May 2005.