

Reorganization of solar magnetic field by a flare event*

P.K. Manoharan¹, L. Van Driel-Gesztelyi^{2,3}, M.Pick², P.Démoulin²

¹Radio Astronomy Centre (NCRA), Tata Institute of Fundamental Research, Post Box 8, Ooty 643001, India

²Observatoire de Paris, DASOP, URA CNRS 2080, 92195 Meudon, France

³Konkoly Observatory, Budapest, Hungary

Although the soft X-ray and radio emissions caused by solar flares are produced by different physical mechanisms of the corona, they are intimately related to the magnetic field configuration of the Sun. The combined study of X-ray and radio measurements is important in the understanding of the large-scale MHD disturbances and related phenomena produced by a flare. A unique set of observations, for a low heliolatitude flare, obtained with the Yohkoh/SXT and Nancay radioheliograph is discussed, together with supporting magnetic field data from Kitt Peak Observatory. This flare starts with the expansion of spectacularly twisted loops, followed by sporadic radio bursts (some of them are detected at high heliolatitude, 65° south), appearance of two remote X-ray brightenings and formation of two coronal holes on opposite hemispheres of the Sun. The timing and location of these events provide evidence for a large-scale magnetic reconnection between the expanding twisted flare loops and overlying huge loops inter-connecting quiet regions on the Sun. The proposed scenario may also explain the source of energetic electrons measured by Ulysses at high heliolatitude (74° south).

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