[SO11] MAGNETIC FIELD STRENGTH IN THE SOLAR CORONA DERIVED FROM TYPE II BAND SPLITTING

K.-S. Cho[1], J. Lee[2], D. E. Gary[2], Y.-J. Moon[1],
S. -C. Bong[1], Y.-H. Kim[1], and Y. D. Park[1]
[1]*Korea Astronomy and Space Science Institute*
[2]*Center for Solar-Terrestrial Research, New Jersey Institute of Technology*

The phenomenon of band splitting in type II bursts can be a unique diagnostic for the magnetic field in the corona, which is, however, inevitably sensitive to the ambient density. We apply this diagnostic to the CME-flare event on 2004 August 18 for which we were able to locate the propagation of the type II burst and determine the ambient coronal electron density by other means. We measured the width of the band splitting on a dynamic spectrum of the bursts observed with the Green Bank Solar Radio Burst Spectrometer (GBSRBS), and converted it to the Alfven Mach number under the Rankine-Hugoniot relation. We then determine the Alfven speed and magnetic field strength with use of the coronal background density and shock speed measured with the Mauna Loa Solar Observatory Mk4 coronameter. In this way we found that the shock compression ratio is in the range of 1.5−1.6, the Alfvenic mach number is 1.4−1.5, the Alfven speed is 550−400 km s^{-1}, and finally the magnetic field strength decreases from 1.3 G to 0.4 G while the shock passes from $1.6R_S$ to $2.1R_S$. The magnetic field strength derived from the type II spectrum is finally compared with the Potential Field Source Surface (PFSS) model for further evaluation of this diagnostic.

[SO12] Examination of small-scale X-ray activities using Hinode (Solar-B) XRT data

김연한, 문용재, 조경석, 봉수찬, 박영득
한국천문연구원

We have examined small-scale X-ray activities from Oct. 20, 2006 to present using X-ray telescope (XRT) onboard Hinode (Solar-B) that was recently launched. The XRT has several strong advantages compared with the Yohkoh SXT; for example, high spatial (1″ pixel resolution) and temporal resolution (less than 1 s), wide temperature coverage (1-30 MK), and wide field of view (2.1-2.3 solar radii). Such advantages enable us to examine small-scale activities as well as large-scale eruptions. We have continuously examined XRT data and found the following X-ray activities : X-ray jets (9 events), loop eruptions (7 events), cusp-like ejections (2 events), loop brightenings (1 event), and X-ray plasma ejections (1 event). These activities are relatively small (less than 100″ in length and about 10 ″ in width) compared to those from Yohkoh SXT. They all come from quiet regions and have no-association with flares. They seem to be associated with small-scale reconnections such as, micro- or nano-flares. We are examining their physical and morphological characteristics. Finally we will discuss interesting scientific topics to be studied by Hinode XRT.