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Speed profiles of ICMEs detected by IPS observations

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We have investigated property of traveling interplanetary coronal mass ejections (ICMEs) by using interplanetary scintillation (IPS) observations using 4 ground-based stations of radio telescope. IPS observations allow us to determine solar wind condition between 0.2 and 1AU.

In this study, we analyzed data of the solar wind disturbance factor, so-called g-value, derived from our IPS observation. From this analysis, we made a list of IPS disturbance event days and all-sky maps of g-values. With assumptions that (1) an IPS disturbance event day correspond to a CME in the period of solar minimum, (2) motion of ICMEs is radial and (3) ICME is located on enhanced g-value region, we compared our list (or all-sky maps) with other catalogs, i.e. SOHO/LASCO CME catalog [URL: http://cdaw.gsfc.nasa.gov/CME_list/index.html] and ICMEs catalog [Richardson and Cane, 2010]. We identified fourteen IPS disturbance event days which relate to both near-Sun halo CME and near-Earth ICME in periods of 1997, 1998, 2008 and 2009. For these event days, we calculated speed profiles of ICMEs traveling at three locations, i.e. near-Sun, interplanetary space and near-Earth.

In this talk, we report speed profiles of ICMEs which is derived from analysis of IPS disturbance event days.

Keywords: Interplanetary space, Coronal mass ejections, Space plasma, Ground-based observation