[S11-3] Open Field Structure Associated with a Solar Eruption

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The open field structure is a necessary condition for solar eruption but rarely observed. In this study, we report a low coronal open field structure that was formed just after the eruption of a coronal mass ejections (CME) by the SOHO/LASCO C1 coronagraph on 1998 March 23. A small coronal loop on the northeastern limb began to expand near 0 UT and then became a CME, which had a typical three part structure (core, void and front). Just after the CME front went out beyond the C1 field of view (about 2 solar radii), we can see clearly a conical open structure (coronal mass depletion) at 00:52 UT. There was no significant GOES X-ray flux increase during that time, but small microwave brightening was observed below the CME core by Nobeyama Radio Heliograph (NoRH). The open structure remained in place for a couple of hours and then slowly disappeared being encroached by neighboring fields for several hours. When this CME was seen in LASCO C2 and C3 field of view, it looked like radially ragged structures rather than a flux rope.

[S11-4] Low Coronal Observations of Type II Associated CMEs by MK4

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Although it is well known that the drifting stripes of metric type II bursts are the signature of coronal shock waves (1.2~2.5Rs), there has been the controversy about CME-flare-type II relationship for several decades. Due to the lack of low coronal image and/or radio images with high cadency and sensitivity, their relationship has been usually studied by extrapolating the CME kinematics observed by SOHO/LASCO C2 (2~6Rs). The Mark 4 K-coronameter (MK4) from Mauna Loa Solar Observation with low coronal field coverage (1.08 Rs - 2.85Rs), high time (3min) and spatial (12″) resolutions allows us to examine the more details of CME kinematics at the type II starting time. In this study, we have examined the relationship between type II burst and CME by using the 12 type II-CME pairs simultaneously observed by MK4 and RSTN radio spectrographs from 1997 to 2003. As a result, we found that: (1) all type II bursts started after the CME appearance and their mean time delay is about 12 minutes; (2) the CME heights measured at the starting time of type II bursts are distributed within the range between 1.2Rs and 2.3Rs; (3) all shock speeds except for a couple of events are comparable with those of CMEs leading edge; (4) the coronal number densities derived from type II emitting frequencies and CME heights are significantly larger than typical observed values. Our results support that CMEs may be the origin of coronal type II radio bursts.