M11b Spatial Fragmentation of the Microwave Emission in a Geoeffective Flare

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A powerful geoeffective flare (3B/M7.1), which occurred on 1998 September 23 in the active region NOAA 8340, was studied using microwave and Yohkoh/HXT data. The microwave emission of the flare was recorded at the Siberian Solar Radio Telescope (SSRT, 5.2 cm) with the spatial resolution of 18" and the temporal resolution of 0.7 sec.

A set of short bursts was detected in the initial stage of the flare. They had a common source, but were distributed over the flare region. Rapid brightness variations of components of the source corresponded to each group of short bursts. Their continuous spatial variations reached 2' with the average apparent velocity of 10^4 km s⁻¹.

Possible mechanisms responsible for the generation of the moving microwave sources are discussed.

High correlation was found between perturbations of the total electron content in the Earth's ionosphere and the time profile of the hard X-ray emission of this flare.