

# MULTI-WAVELENGTH ANALYSIS OF UNUSUALLY SHORT MICROWAVE BURST PRECEDING A SOLAR FLARE

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We present the detailed analysis of short microwave burst observed in active region NOAA 13559 on January 23, 2024 at 02:34 UT, one hour before a C-class solar flare in the same active region. The radio burst was detected by Siberian Radioheliograph (SRH) as a compact source of microwave emission with the brightness temperature around 100 000 K, 20 s life time. The corresponding radio flux at the peak frequency reaches 12 sfu. Due to the low flux values, the burst is hardly visible in spectrographs. However, SRH has much higher sensitivity than single dish instruments and allows for both localizing the burst source and detailed investigation of its spectrum in the range of 3–24 GHz. Based on the multi wavelength observations in 48 frequency channels, we have reconstructed the dynamic spectrum of the burst. It was found that the spectrum is characterized by a frequency drift towards higher frequencies and demonstrates pronounced fine structure in both spatial and temporal domains. Based on our findings, we concluded that the microwave emission of the burst is a gyro-synchrotron emission produced by accelerated electrons traveling along a plasma loop towards the solar surface. Since the burst source shares its location with the subsequent solar flare, it can be considered as a radio precursor of a forthcoming solar flare.

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