

# SOLAR BURST WITH MILLIMETRE-WAVE EMISSION AT HIGH FREQUENCY

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**ABSTRACT.** Solar burst emission data at shorter millimetre wavelengths have been based on a few events measured with low sensitivity and relatively poor time resolution. We present here the first high sensitivity and high time-resolution observations taken simultaneously at 90 GHz ( $\lambda = 3.3$  mm) and at 30 GHz ( $\lambda = 10$  mm). These have identified a unique impulse burst on 21 May 1984 with fast pulsed emission that was considerably more intense at 90 GHz than at lower frequencies. Hard X-ray time structures at energies above 25 keV were almost identical to the 90 GHz structure to better than 1s. The structure of the onset of the major 90-GHz burst coincided with the hard X-ray structure to within 128 ms. All 90-GHz major time structures consisted of trains of multiple sub-second pulses with rise times as short as 0.03s and amplitudes that were large compared with the mean flux. When detectable, the 30-GHz sub-second pulses had smaller relative amplitude and were in phase with the corresponding 90-GHz pulses.

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