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Properties of decameter spikes

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Recently it was reported about observations of solar spikes at frequencies 20-30 MHz. Their average durations and frequency widths were about 1 s and 60 kHz correspondingly. In the present report the duration, frequency width and flux dependencies on frequency are considered for bursts observed during the spike storm on 27 July - 2 August 2002. It was established that frequency width increases linearly with frequency from 45 kHz to 65 kHz. On the contrary the spike duration is decreased with frequency. It equals 1.2-1.5 s and 0.8-0.9 s at frequencies 20 MHz and 30 MHz correspondingly. The flux of bursts as mentioned earlier varies in the range from 10 s.u.f. up to 200 s.u.f. For the first four days it decreases as frequency in power 4-5. For the other three days it remains practically constant. We explain the found frequency width dependence on frequency in the frame of plasma mechanism of radio emission. According to it fast electron beams generate Langmuir waves, which are transformed into electromagnetic waves within the solid angle about 20°. Comparison with observational data allows to derive the magnetic field in the place of spike generation that equals about 2 G. In this model the spike duration is defined with Langmuir waves decay time.