NEW FAMILIES OF SUPER SHORT RADIO BURSTS

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Abstract

Several new families of super-short Solar radio features occurring in type IV bursts are presented. We discovered them in the high time resolution data (1 ms) recorded by the multichannel radiopolarimeter of the Trieste Astronomical Observatory. The reliability of these super-short structures (SSSs) is confirmed by one-to-one identification of individual SSS events in the corresponding Artemis-IV (University of Athens) spectral recordings.

The most important characterists of SSSs is that they are faster then spikes, up to now considered the shortest Solar radio bursts [Guedel and Benz, A&A 231, 1, 202–212, 1990]. SSSs are 1–6 times shorter than the spikes, and it seems that their duration is not frequency dependent. Another distinction in respect to spikes is a stochastic change of the polarization degree (0–100%), sometimes also including the change of the sense of polarization within a given group of SSSs.

Analysis of the spectral and single-frequency morphology reveals at least 3 distinct categories: "rain drops", broad-band SSSs, and spike-like SSSs. It seems that some subclasses also exist.

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