Solar Radio Outbursts as Potential Radio Communications Jammers: Analysis of Selected Cases

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Solar radio outbursts associated with major flares consist of broadband radio noise, whose intensity can reach quite high levels in a range of radio bands relevant to radio communications. Classified as type IV bursts in solar radio astronomy when detected in the metric band, their decimetric counterparts, if any, are typically known as radio flares (Tenflares). Tenflares are triggered during the impulsive phase of flares as shown by their timing with respect to the correspondent SXR and H-alpha flare and have an impulsive evolution on the timescale of minutes to tens of minutes reaching levels one order of magnitude higher than the quiet Sun background. Usually the metric noise is somewhat delayed and reaches levels even four orders of magnitude higher than the quiet Sun background on a timescale from minutes to hours. Such a noise enhancement is observed as a slowly-varying, broadband intense background level, over which a rich variety of broad- to narrow-band, sometimes drifting, impulsive fine structures is superimposed (such as e.g. spikes, quasi-periodic pulsations and absorptions). Such a complex radio phenomenology represents a potential source of radio communication jamming, when the solar radio flux level exceeds a band-dependent threshold. In this framework we present a selection of intense solar radio outbursts observed by the Trieste Solar Radio System (TSRS) during the past solar maximum and comment on their characteristic evolution in the time-frequency domain with particular attention to the maximum level of detected radio noise.