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Abstract:

Type III radio bursts are frequently detected during solar flares and are thought to be caused by high-energy electrons that are accelerated during a short period of time and then propagate along the open magnetic field. Such a radio burst phenomenon is also expected to take place on other solar-type and late-type stars that are magnetically active like the Sun. However, as far as we know, no any stellar type III radio bursts have been observed. It is probably due to that the sensitivity of previous radio telescopes is not good enough to detect and recognize the weak radio flux originating from distant stellar flares. In this proposal, we intend to use FAST 19-beam L-band observation to detect the signals of stellar radio bursts generated during stellar flares in terms of its unprecedentedly high sensitivity. With the detection of stellar type III radio bursts, we are able to explore the mechanisms of impulsive energy release during stellar flares and build a connection to solar flares.