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Isolated low-frequency radio type II bursts

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The appearance of type II radio bursts is mostly associated with flares and coronal mass ejections and other transient features. Propagating shock waves to the interplanetary medium can also be the cause to have a variety of radio emissions simultaneously. We analyzed well-separated (isolated) Decameter-Hectometer (DH) type II bursts which appear in the dynamic spectra without any earlier radio signatures. We studied 26 isolated DH type II bursts observed in 1998-2016. One explanation for the isolation of the DH type II bursts and delay in their observation time could be the occurrence of the flare-CME launch on the far side of the Sun. It could cause the emission to be observed only when the source gets high enough in the solar atmosphere. We found that only 30% of the bursts originated from the far side of the Sun, but also that no bursts originated from the central region of the Sun. Our analysis suggests that for the majority of isolated DH type II bursts a CME bow shock is more probable than a shock near the CME flanks. For 12 events we had observations from different viewing angles, from the instruments onboard Wind and STEREO satellites. Only five of them showed delays in the radio emission onset. Our analysis shows that in three events occultation could have been the cause of the delay in the emission onset. We also suggest that isolated type II radio burst needs specific conditions to form and be visible in the dynamic spectrum.

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