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An In Situ Type III Radio Burst Event Observed Jointly by the Expanded Owens Valley Solar Array and the Parker Solar Probe MEIQI WANG, BIN CHEN, SIJIE YU, DALE GARY, JEONGWOO LEE, New Jersey Institute of Technology, NEW JERSEY INSTITUTE OF TECHNOLOGY TEAM — Solar type III radio bursts are generated by beams of energetic electrons that travel outward along open magnetic field lines through the corona and the interplanetary space. Here we report a type III burst event observed jointly by the Expanded Owens Valley Solar Array (EOVSA) and the Parker Solar Probe (PSP) shortly after its second perihelion in April 2019. This type III burst event is associated with a solar jet near the western boundary of a solar active region, which manifests in EOVSA 1–18 GHz dynamic spectrum as a group of impulsive microwave bursts. The type III burst event continues to the interplanetary space in the decameter–kilometer wavelength range (300 kHz–30 MHz) observed by multiple spacecraft including PSP/FIELDS, Wind/WAVEs, and STEREO/WAVES, and appears to reach the local plasma frequency at the PSP spacecraft. The multi-point spacecraft measurements allow us to constrain the source location of the bursts and their directivity in the interplanetary space. In addition, the type III burst event coincides with an enhanced suprathermal electron population with an anti-sunward beam-like component as measured by PSP/SWEAP. We argue that the type-III-burst-emitting energetic electrons observed in situ may be associated with an electron beam produced during the jet event that propagating upwards along open field lines reaching the PSP spacecraft.

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