Studying the relationship between energetic particle injections, chorus, and outer radiation belt electrons with NASA's MMS and Van Allen Probes

Drew L. Turner[(1)], Joe F. Fennell[(1)], J. Bernard Blake[(1)], Allison Jaynes[(2)], Daniel N. Baker[(2)], Rick Wilder[(2)], Geoff D. Reeves[(3)], Wen Li[(4)], Craig Kletzing[(5)], Ian Cohen[(6)], and Barry Mauk[(6)]

(1) The Aerospace Corp., El Segundo, CA, USA

(2) LASP - University of Colorado, Boulder, CO, USA

(3) Los Alamos National Laboratory, Los Alamos, NM, USA

(4) University of California, Los Angeles, CA, USA

(5) University of Iowa, Iowa City, IA, USA

(6) Applied Physics Laboratory, Laurel, MD, USA

Between March and September of 2016, the orbits of NASA's Magnetospheric Multiscale (MMS) and Van Allen Probes (RBSP) missions overlapped on the dawn side of the near-equatorial magnetosphere. During this period, the four MMS spacecraft underwent a series of conjunctions with both RBSP, including one in which all six spacecraft were within 1 Earth radii of each other. Whistler-mode chorus waves and energetic particle injections were observed by both MMS and Van Allen Probes during many of the conjunctions, including the one with all six spacecraft. From such multipoint observations, we investigate the relationship between energetic particle injections from the plasma sheet and chorus waves and how these together contribute to enhancements of relativistic electrons in Earth's outer radiation belt.