

# Plasma waves causing relativistic electron precipitation events at International Space Station

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We introduce the latest paper (Kataoka et al., 2020) showing three different types of relativistic electron precipitation (REP) events observed at International Space Station (ISS), associated with electromagnetic ion cyclotron (EMIC) waves or whistler mode waves as observed by the Arase satellite at conjugate locations near the magnetic equator. Three different detectors installed on the ISS were complementarily used; CALET/CHD as the detector of precipitating MeV electrons, MAXI/RBM as the detector of sub-MeV electrons from horizontal and vertical directions, and SEDA-AP/SDOM to quantitatively measure the energy spectrum. The REP event on Aug 21, 2017 shows a quasi-periodic intensity variation at  $\sim 1$  Hz which corresponds to variations of the EMIC waves at the Arase altitudes. The REP event on April 24, 2017 shows rapid and irregular intensity variation which corresponds to the amplitude variation of chorus waves, while the REP events on October 26, 2017 shows a smooth quasi-periodic time variation at  $\sim 0.2$  Hz which corresponds to the amplitude variation of “electrostatic” whistler mode waves. This study clearly demonstrates that the time variation of REP events at ISS are caused by various types of plasma waves near the magnetic equator.

Reference: Kataoka et al. (2020), Plasma waves causing relativistic electron precipitation events at International Space Station: Lessons from conjunction observations with Arase satellite, submitted to JGR Space Physcs.