



Statistical characteristics of particle injections in the plasma sheet on the base of Cluster/RAPID observations

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Particle injections supply the inner magnetosphere with energetic electrons and ions. They significantly affect the dynamics of the radiation belts. For more than 16 years, the Cluster mission has collected a vast amount of data relevant to the study of particle injections. In this work, we present a statistical study of electron and ion injections observed throughout the plasma sheet based on observations made by the Cluster/RAPID instrument. In comparison with previous studies, the advantages of Cluster observations are: (1) ability to resolve the composition of the ion population; (2) polar orbits provide information on the spatial distribution of injections in the north-south direction; (3) the duration of the mission allows us to consider variations during a solar cycle and (4) within 10 R_E , we can analyze the associated electromagnetic fluctuations using MAARBLE data. This study is supported by the VolkswagenStiftung.