

## **“Dynamics of the near-Earth's magnetotail”**

Rumi Nakamura

*Group leader at Space Research Institute (IWF),  
Austrian Academy of Sciences and  
Privatdozent at University of Graz*

The Earth's elongated nightside magnetosphere, the magnetotail, is formed by interaction between the magnetized solar wind and the terrestrial magnetic field. While the magnetotail extends far beyond 100s of  $R_E$ , the most dynamic signatures, such as storms and substorms, even involving the auroral ionosphere, take place due to plasma processes in the near-Earth's magnetotail current sheet in an explosive manner. Data taken from multi-point spacecraft enabled to study these transient (seconds up to several minutes) and localized (100 kilometers up to a few  $R_E$ ) phenomena as well as large scale changes in the current sheet configuration by differentiating temporal and spatial disturbances of these processes. In this presentation recent advances in our understanding of the near-Earth's magnetotail current sheet processes based on multipoint observations such as Cluster and THEMIS mission are discussed, highlighting universal plasma processes in the solar system and other astrophysical plasmas such as reconnection, plasma jets, and other instabilities in the current sheet and their relevance to the large-scale evolution of the magnetotail.