

The SCOPE mission

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SCOPE is the mission that is being planned by a WG at ISAS/JAXA. The launch date is ~2015. As a post-MMS mission, SCOPE focuses on revealing the nature of cross-scale coupling in the space plasma dynamics that develop in the magnetosphere and in the near-by interplanetary space. Our main interest in space plasma dynamics is mostly in large-scale phenomena, to which the MHD equations are said to be good enough. While this may be true for less-dynamic situations, the phenomena that catch our eyes, i.e., shocks, magnetic reconnection, and turbulence, are very dynamic. In the course of an evolution of a dynamic space plasma phenomenon, what commonly happens is the emergence of a key region whose spatial scale is sub-MHD and in which non-MHD processes are playing a key role in the whole dynamics. It is the understanding of the coupling between the non-MHD key processes and the whole MHD-scale dynamics that enables us to proceed to the next stage of space plasma physics research. SCOPE consists of 5 spacecraft. Two of them form a pair and will perform 'perfect measurements' of plasma and fields, including 10 msec electron detection and 3-component wave measurements, upon encountering the key region. Other three will surround the pair and monitor three-dimensionally the ion/MHD scale dynamics that would be regarded as boundary conditions to the key region monitored by the pair. In the talk, technical developments that have been made this year towards the realization of the mission will be reported. A possibility of international collaboration with ESA, which will certainly increase the number of the spacecraft and thus enhance the mission's scientific return, is emerging and its status will also be reported.