R009-35
Zoom meeting D ：11/2 PM1 (13:45-15:30)
14:15-14:30

A survey of ion jets within current sheets in the vicinity of Mars with MAVEN

#Yuki Harada[1)], Jasper S. Halekas[2)], Shaosui Xu[3)], Gina DiBraccio[4)], Suranga Ruhunusiri[5)], Takuya Hara[6)], James P. McFadden[6)], Jared R. Espley[4)], David L. Mitchell[6)], Christian Mazelle[7)]
[1)]Dept. of Geophys., Kyoto Univ.,[2)]Dept. Phys. & Astron., Univ. Iowa,[3)]SSL, UCB,[4)]NASA GSFC,[5)]Univ. of Iowa,[6)]SSL, UC Berkeley,[7)]CNRS,IRAP

We present a survey of ion jets observed during current sheet crossings by MAVEN in the near Mars space. We develop a fully automated algorithm that identifies current sheet crossings along with ion jets detected during the crossings, thereby utilizing a large volume of currently available MAVEN data accumulated from over 10,000 orbits. We focus on current sheets located in the Martian magnetosphere (defined as the region below the ion composition boundary in this study). Our statistical results show that (i) both sunward and anti-sunward ion jets embedded within current sheets are widely distributed around Mars, (ii) average magnetic field configuration and topology observed concurrently with the ion jets are consistent with those expected for reconnecting current sheets, (iii) the jet occurrence appears to be independent of upstream driver conditions, and (iv) most of the identified current sheets are thin with half-thickness comparable to ion inertial lengths and are embedded in low beta (<1) plasma. The apparent independence of ion jet occurrence from upstream drivers (iii) may be explained by the result (iv) that the two known conditions for reconnection onset (current sheet thickness and beta difference-magnetic shear relationship) could be satisfied for most of the identified current sheets irrespective of the solar wind conditions. We discuss potential implications of these results for the dynamics of the Martian magnetosphere.