R009-15
B 会場 ：9/27　AM1 （9:00-10:30）
9:15〜9:30

#やん　まおどん [1,2],Lei Jiuhou[2], 寺田　直樹 [1],Zhang BinZheng[3],Dang Tong[2], 堺　正太朗 [1], 坂田　遼弥 [1]
([1] 東北大・理・地球物理,[2] 中国科学技術大学,[3] 香港大学,[4] 東北大・理・地球物理,[5] 東北大・理・地球物理,[6] 東北大・理・地球物理学専攻,[7] 東北大・理・地球物理

Kelvin－ Helmholtz Instability at Mars by a Newly-developed Multifluid Model

#Maodong Yan[1,2],Jiuhou Lei[2],Naoki Terada[1],BinZheng Zhang[3],Tong Dang[2],Shotaro Sakai[1],Ryoya Sakata[1]
([1]Department of Geophysics, Graduate School of Science, Tohoku University,[2]University of Science and Techonology of China,[3]The University of Hong Kong,[4]Department of Geophysics, Graduate School of Science, Tohoku University,[5]Department of Geophysics/Planetary Plasma and Atmospheric Research Center, Graduate School of Science, Tohoku University,[6]Department of Geophysics, Graduate School of Science, Tohoku University,[7]Department of Geophysics, Graduate School of Science, Tohoku University

Shear-driven Kelvin-Helmholtz (K-H) instability can form along the boundary of the solar wind interaction with non-magnetic planets (such as Mars and Venus) and detach the plasma clouds to contribute the ion escape process. Previous studies reported partially and fully developed K-H vortices at Martian ionopause. In this work, we develop a new multifluid model, which solves the continuity, momentum and energy equations for four species (Hˆ+, Oˆ+, O_2ˆ+, CO_2ˆ+) separately, to study the K-H instability at Mars. The simulation results show that the K-H instability prominently occurs in the − E hemisphere, due to the effect of convective electric field. The K-H instability is generated in the region with a solar zenith angle of ˜45 degrees, and propagates downstream along the boundary with a period of 1-2 minutes. The hemispherical asymmetry and period are well consistent with the observations.