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New Insight into the Magnetosheath

Guest Editor:

Prof. Dr. Chao Shen
Faculty of Science, Harbin Institute of Technology (Shenzhen), Shenzhen 518055, China

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Message from the Guest Editor

Magnetosheaths are the regions between bow shocks and planetary magnetopauses or ionospheres, which are created by the impacts of supersonic solar wind onto the planetary magnetospheres or ionospheres. Magnetosheaths are natural plasma laboratories, composed of strongly turbulent plasmas, and demonstrate various fundamental plasma dynamic phenomena. Magnetospheaths also play important roles in the evolution of planetary magnetospheres and ionospheres. Our understanding of the complicated features of magnetosheaths demands effective exploration tools, including basic theoretical research, advanced space measurements (multiple spacecraft joint observations with Cluster, THEMIS, MMS, etc.), and newly developed simulation methods (3D Hall MHD, 3D hybrid and Vlasov simulations).

This Special Issue serves as a forum to showcase recent scientific discoveries and techniques in the field of magnetosheaths to enhance our understanding of the mechanism of planetary turbulent plasmas. We welcome original articles, review articles, and case reports that include theoretical studies, in situ observation analysis, and various kinds of simulations on the dynamics of planetary magnetosheaths.