

Structures of bow shock and boundary layer of ion scale magnetosphere

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Interaction between the solar wind and the mini-magnetosphere of dipolar magnetized objects is investigated by a three-dimensional hybrid simulation, which treats the ions as kinetic super particles via particle-in-cell method and the electrons as a massless fluid. The hybrid simulation is suitable for the study of the mini-magnetosphere which scale is an order of the ion Larmor radius of the solar wind ions at the magnetopause boundary, because the ion kinetic effects are important for its structure. Since the dayside sheath thickness is also an order of the ion Larmor radius, the bow shock has a downstream transition region which overlap with the boundary layer of the magnetosphere. We will also discuss the effects of the interplanetary magnetic field (IMF) condition for the bow shock and boundary layer structures of the ion scale magnetosphere.

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