

PEM026-P02

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## Three-Dimensional Global MHD Simulation on Magnetospheric Dynamics of Saturn

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Saturn's rotation period is almost same as Jupiter's, which is the shortest in the solar system, and Saturn's magnetic moment is 1000 times the earth. Furthermore, the polarity of the intrinsic magnetic field is opposite to the earth, and the difference between magnetic axis and rotation axis is 1 degree or less. Cassini's observation recently found that Saturn's magnetosphere has bowl shape structure because of solar wind which blows obliquely. From these features, we can expect that Saturn's magnetosphere is so different from Earth's.

When we focus on the planetary magnetosphere in space, the global structure can be well described by magnetohydrodynamic (MHD) equation. So we aim at understanding the structure of Saturn's magnetosphere by examining dependency to interplanetary magnetic field (IMF) and response to solar wind dynamic pressure.

Then, we have examined how the characteristic bowl shape is formed and how the change of inner magnetospheric structure occurs by using a model of interaction between the solar wind and Saturn's magnetosphere with dipole tilt. Particularly, we show responses of the magnetosphere dynamics and polar ionosphere when the IMF rotates in yz plane.

Keywords: Saturn's magnetosphere, MHD simulation, dependency to IMF, solar wind dynamic pressure, interaction with solar wind, polar ionosphere