



MHD simulations of fast-rotating planetary magnetospheres

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We present 3D magnetohydrodynamics (MHD) simulations of the interaction of a supersonic plasma (e.g. the solar wind) with a fast-rotating magnetized spherical body (e.g. the magnetosphere of a giant planet of the Solar System). For given solar wind conditions, the structure of the magnetosphere strongly depends on the orientation of the magnetic axis and the planet spin axis, but also on the ratio of the time required for an Alfvén wave to reach the magnetopause from the planet and the planet rotation period. The effects on the Dungey and Vasyliunas cycles will be discussed.