

Three-dimensional MHD simulation of the solar wind with rotation of the Sun

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It is well known from Parker model that the solar wind becomes supersonic beyond a critical radius. The two-dimensional structure was given by several simulation studies. In the present study, it is extended to the three dimensions when a spherically symmetric 1-dimensional solution by Parker is used as an initial state. By using this model, we can investigate physically complex phenomena more detail. We use the Parker solution and a dipole magnetic field as the initial conditions of the solar wind in the simulation. The three-dimensional structure of the solar wind has been simulated by using a global MHD model and the Parker spiral configuration has been demonstrated. At that time, magnetic field lines enter the Earth's revolution orbit with an angle of 45 degrees. In addition, simulation based on the observations is in progress.