



Magnetic Cloud Model Versus Numerical Simulations

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We have performed numerical three dimensional magnetohydrodynamic simulations of magnetic cloud propagation in the inner heliosphere. Magnetic clouds are taken as loop-like flux ropes rooted at both feet to the Sun. Magnetic flux ropes had various inclinations to the ecliptic plane, from 0 to 90 deg, in the simulations. The simulations provided hypothetical measurements of the solar wind by spacecraft located at 1 AU during passages of magnetic clouds. These simulated measurements were fitted by a model of a magnetic cloud described as an expanding force-free elliptic cylinder. Derived geometric parameters of magnetic clouds are directly compared to real values following from results of MHD simulations.