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Magnetohydrodynamic Study of Shock Waves in a Current Sheet for Two-Fluid Medim

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Özet A numerical simulation is performed to investigate the shock wave formation in a current sheet of a solar coronal magnetic loop and its effect on the magnetic reconnection. The modified Lagrangian Remap (LareXd) code is used, in which the viscosity force and heat flux term for a one-fluid medium, and Ohm's law, friction of fluid element and heat transfer term for a two-fluid medium in addition to viscosity and heat flux are included. Typical coronal parameters are used as initial conditions. The polarization does not appear at radial expansion of the solar corona. As a result E = 0 in the sheet, and the current density becomes as J = σ(V x B). We assumed that the current sheet is a quasi-neutral plasma and we used that assumption in our magnetohydrodynamic equations. Our aim of this work is that we could compare one-fluid and two-fluid medium for shock waves in a current sheet in solar corona and calculate how the dissipative effects are changed the shock wave formation.

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