

Abstract Submitted
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Penetration of Conductive Plasma Across a Magnetic Field

CHRISTOPHER PLECHATY, Nevada Terrawatt Facility, University of Nevada, Reno, SANDRA WRIGHT, STEPHAN NEFF, PHILIPPE LEBLANC, RADU PRESURA, Nevada Terawatt Facility, University of Nevada, Reno — The mechanism which allows a conductive plasma to penetrate through a magnetic field, such as the penetration of the solar wind into the Earth's magnetosphere, is still under debate. Several explanations exist which attempt to explain this phenomenon. Three such explanations are magnetic reconnection (Dungey 1961), a viscous-like interaction (Axford and Hines 1961), and a process called impulsive penetration (Lemaire and Roth 1978, Schmidt 1960). Experiments were performed at the Nevada Terawatt Facility to investigate the interaction of an expanding, conductive plasma with an external magnetic field orientated perpendicular to the expansion direction. In these experiments, the plasma was observed to penetrate the magnetic field due to instabilities which formed on the boundary layer between the plasma and the magnetic field. The experimentally observed penetration mechanism will be compared with those previously listed. Work supported by DOE/NNSA grant DE-FC52-06NA27616.

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