

Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

The Electrodeless Lorentz Force Thruster THOMAS WEBER, BRIAN NELSON, RICHARD MILROY, Plasma Dynamics Laboratory, University of Washington, DAVID KIRTLEY, JOHN SLOUGH, MSNW LLC — The Electrodeless Lorentz Force (ELF) thruster is a novel plasma thruster under development at MSNW and the University of Washington which utilizes Rotating Magnetic Field (RMF) current drive technology to ionize a neutral gas and drive an azimuthal current to form a Field Reversed Configuration (FRC) plasmoid in a diverging magnetic field. The magnetic gradient imparts a net force to the FRC which is ejected from the thruster at high velocity. ELF has been shown to operate from 10 - 100 kW, with an exhaust velocity of 15 - 40 km/s. The ELF thruster is expected to have an extremely large range of efficient power levels, high thrust density, high specific power, long lifetime, and the ability to utilize virtually any type of propellant. Thruster design and operation, novel diagnostics, and a discussion of experimental results detailing the key physical phenomena within the thruster and exhaust plume will be presented.

Thomas Weber
Plasma Dynamics Laboratory, University of Washington

Date submitted: 17 Jul 2009

Electronic form version 1.4