

Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Benchmark test cases for low temperature magnetized plasma modeling JEAN-PIERRE BOEUF, Universite P. Sabatier, ANDREI SMOLYAKOV, University of Saskatchewan, GERJAN HAGELAAR, Universite P. Sabatier, KENTARO HARA, Texas A&M University — Cross-field plasma discharges play an important role in space propulsion and material processing. Such low-temperature magnetized plasmas are typically non-equilibrium, moderately ionized, and partially magnetized, which exhibits unique physical processes compared to other plasma phenomena. Low temperature magnetized plasma modeling (LANDMARK) project [<https://www.landmark-plasma.com/>] has been established as a subset of the previous ExB workshops. The purpose is to offer a framework where different computational models can be tested and benchmarked against other codes. We propose three standard test cases for cross-field discharge modeling tools, including a one-dimensional (1D) azimuthal kinetic simulation of electron cyclotron drift instability (ECDI), a 2D azimuthal-axial kinetic simulation of a dc discharge in the presence of ECDI, and a 1D axial fluid model of Hall thruster discharge plasmas. In the poster presentation, the test cases and numerical results will be discussed.

Kentaro Hara
Texas A&M University

Date submitted: 15 Jun 2018

Electronic form version 1.4