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# 1P35 - MODELING POWER-FLOW USING THE PERSEUS/FLEXO AND HYDRA MHD SIMULATION CODES

*Monday 24 June 2019 13:00 (1h 30m)*

In current and future pulsed-power devices, it has become increasingly important to have predictive capability for determining the amount of energy coupled through the magnetically-insulated transmission line (MITL) to the load. Because of the high magnetization and low densities of electrode plasmas in the MITL gap, extended-MHD effects may play a critical role in power-flow physics. In this presentation, we show simulations from PERSEUS [1]/FLEXO and HYDRA [2], which are both capable of modeling MHD and extended-MHD effects in inner MITL power-flow. Specifically, we focus our attention on relevant power-flow plasma quantities, such as plasma density and current density, as predicted by both codes. This problem has recently been simulated with PERSEUS in Hamlin and Seyler [3], and serves as a relevant test problem for understanding the role that extended-MHD plays in power-flow systems.

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[1] C. E. Seyler and M. R. Martin, vol. 18, 012703, 2011
[2] M. Marinak et al, Physics of Plasmas, vol. 8, 2275, 2001
[3] N. D. Hamlin and C. E. Seyler, Physics of Plasmas, vol. 25, 102705, 2018

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