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PSI-Center Simulations of Validation Platform Experiments B.A. NELSON, C. AKCAY, A.H. GLASSER, C.J. HANSEN, T.R. JARBOE, G.J. MARKLIN, R.D. MILROY, K.D. MORGAN, P.C. NORGAARD, U. SHUMLAK, B.S. VICTOR, University of Washington, C.R. SOVINEC, J.B. O'BRYAN, University of Wisconsin-Madison, E.D. HELD, J.-Y. JI, Utah State University, V.S. LUKIN, NRL — The Plasma Science and Innovation Center (PSI-Center - http://www.psicenter.org) supports collaborating validation platform experiments with extended MHD simulations. Collaborators include the Bellan Plasma Group (Caltech), CTH (Auburn U), FRX-L (Los Alamos National Laboratory), HIT-SI (U Wash - UW), LTX (PPPL), MAST (Culham), Pegasus (U Wisc-Madison), PHD/ELF (UW/MSNW), SSX (Swarthmore College), TCSU (UW), and ZaP/ZaP-HD (UW). Modifications have been made to the NIMROD, HiFi, and PSI-Tet codes to specifically model these experiments, including mesh generation/refinement, nonlocal closures, appropriate boundary conditions (external fields, insulating BCs, etc.), and kinetic and neutral particle interactions. The PSI-Center is exploring application of validation metrics between experimental data and simulations results. Biorthogonal decomposition is proving to be a powerful method to compare global temporal and spatial structures for validation. Results from these simulation and validation studies, as well as an overview of the PSI-Center status will be presented.

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