**Development of MH4D for Simulation of Emerging Concept Fusion Experiments** SRINATH VADLAMANI, GEORGE MARKLIN, URI SHUMLAK, TOMAS JARBOE, Plasma Science and Innovation Center, University of Washington, ROBERTO LIONELLO, Science Applications International Corporation — The Boundary Conditions and Geometry group at the newly formed Plasma Science and Innovation Center (PSI-Center) is developing a tetrahedral mesh MHD simulation code to accurately model Emerging Concept (EC) experiments. We are using the MH4D[1] code since it has a tetrahedral mesh which is required to fully represent the complex 3-dimensional geometry of many EC experiments, and it implements verified parallel algorithms based on the PETSc library. This poster will report on progress to add new boundary conditions and additional physics into the code to make it suitable for low to moderate S, circuit driven fusion experiments. Initial modifications will add the capability to model insulating flux conserver boundaries with inductive coupling to external circuits. Validation of these modifications by comparison to HIT-SI experimental results will be presented in another poster[2]. Further modifications will include atomic physics and neutral interactions in the edge region to model plasma sheath boundaries with circuit driven electrodes.

[1]D. Schnack and R. Lionello, Eos Trans. AGU, 85(47), 2004, Fall Meet. Suppl., SH13A-1158
[2]G. J. Marklin and T. R. Jarboe, this meeting.

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