**The Discontinuous Galerkin Method for Simulation of Plasma Dynamics: The Full Two-Fluid System** JOHN LOVERICH, URI SHUMLAK, University of Washington — An algorithm for simulation of plasma dynamics using the discontinuous Galerkin method is presented. The algorithm works in multiple dimensions arbitrary geometries and on parallel platforms. Second, third or 4th order genuinely multi-dimensional spatial discretization with 3rd or 4th order time discretizations are used. The method is explicit, resolves shockwaves in 2 or 3 cells and is implemented for the full two-fluid system with comparisons to the GEM challenge magnetic reconnection results. Full two-fluid simulations of a z-pinch are also presented. The technique can be used as a basis for fully electromagnetic PIC, or hybrid codes. Though the technique is applied to the full two-fluid system, the same technique can easily be applied to simpler plasma fluid models including two-fluid MHD, Hall MHD and MHD.

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