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Towards full-Braginskii implicit extended MHD LUIS CHACON, Oak Ridge National Laboratory — Recently, viable algorithms have been proposed for the scalable, fully-implicit temporal integration of 3D resistive MHD[1] and cold-ion extended MHD[2] models. While significant, these achievements must be tempered by the fact that such models lack predictive capabilities in regimes of interest for magnetic fusion. Short of including kinetic closures, a natural evolution path towards predictability starts by considering additional terms as described in Braginskii's fluid closures in the collisional regime. Here, we focus on the inclusion of two fundamental elements of relevance for fusion plasmas: anisotropic parallel electron transport, and warm-ion physics (i.e., ion finite Larmor radius effects, included via gyroviscosity). Both these elements introduce significant numerical difficulties, due to the strong anisotropy in the former, and the presence of dispersive waves in the latter. In this presentation, we will discuss progress in our fully implicit algorithmic formulation towards the inclusion of both these elements.

[1]L. Chacón, *Phys. Plasmas*, **15**, 056103 (2008)
[2]L. Chacón, *J. Physics: Conf. Series*, **125**, 012041 (2008)

Luis Chacon
Oak Ridge National Laboratory

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