1126-65-352　　　　　**Mine Akbas** and **Abigail L Bowers*** (`abowers@flpoly.org`). *Improving accuracy in the Leray model for the incompressible magnetohydrodynamic equations via adaptive deconvolution-based nonlinear filtering.*

We study a finite-element discretization of the Leray model for the MHD equations that locally chooses the filtering radius using a deconvolution based indicator function to identify regions where regularization is needed. Because this indicator function is mathematically based, it allows us to establish a rigorous analysis of the resulting numerical algorithm. We prove well-posedness, unconditional stability, and convergence of the proposed algorithm, and test the model on several benchmark problems. (Received January 17, 2017)