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Numerical Studies of Boundary Layers in the Princeton MRI Experiment[1] AUSTIN ROACH, HANTAO JI, WEI LIU, JEREMY GOODMAN, Center for Magnetic Self-Organization, PPPL — The Princeton MRI experiment uses a Taylor-Couette apparatus to generate rotating shear flows for the investigation of the magnetorotational instability. Discrepancies have been observed between the experimentally measured fluid flow profiles and those expected from hydrodynamic simulation of the experimental apparatus with the 2-dimensional code ZEUS-2D. While experimental adjustments have been made to produce the desired flow profiles in the apparatus for the investigation of the MRI, an explanation for the difference between the experimental measurements and computational prediction of the fluid flows has not yet been found. An attempt is now being made to account for these differences by adding to the simulations additional effects, such as noisy boundary layers and a more detailed description of the geometry of the experiment. Results of these computational investigations and a comparison to experimental results will be presented.

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