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FRC Formation and Translation Simulations with Anisotropic Viscosity G.A. CONE, R.D. MILROY, C.C. KIM, University of Washington — FRC plasmoid formation and translation are simulated using a modified version of the NIMROD code. These modifications allow for the prescription of an initial vacuum magnetic field suitable for theta-pinch formation or importation of a prescribed FRC equilibrium. Modified boundary condition routines allow for time varying "pusher coils" to translate the FRC. The FRC simulations are performed in the context of several operational FRC devices: PHD, TCS-U, and FRX-L. The formation simulations studied apply to all generic theta-pinch formed FRCs and both uniform and conical theta-pinch formation schemes are simulated. Salient features include the generation of toroidal plasma flow and toroidal magnetic flux with the Hall and ∇P_{e} terms included in Ohm's law. The translation simulations are initialized from a presupposed magnetic equilibrium. Pusher coils translate the FRC in a peristaltic fashion and proper timing of coil firing is critical; this is especially true for shaped translation tubes such as the PHD device. Simulations of FRC translation including a shaped boundary approximating that of the PHD device are investigated. Of key interest in FRC translation is the impact of anisotropic viscosity on the translation efficiency. Results of translation simulations using varying ratios of parallel to perpendicular viscosity are discussed.

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