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Building a Fokker-Planck Solver using the MFEM Finite Element Library BENJAMIN ANTOGNETTI, Univ of New Hampshire, SYUN'ICHI SHIRAIWA, NICOLA BERTELLI, PPPL — Driving toroidal currents by auxiliary power is necessary for magnetic confinement in tokamaks. The process of driving these currents by radio frequency (RF) waves and the corresponding evolution of the electron velocity distribution function is described as a diffusion by the Fokker-Planck (FP) equation. An efficient FP solver fully utilizing the emerging computing architecture is desired for modeling the evolution of tokamak discharge. In this work, we show a new FP solver based on MFEM (www.mfem.org) finite element method library developed at Lawrence Livermore National Laboratory. Initial results on RF waves in the lower hybrid wave frequency regime will be discussed. Output of this solver is compared with the results of existing code. Additionally, we explore the potential for this solver to work on a modern GPU computing architecture.

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