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Upgrades to the ArbiTER edge plasma eigenvalue code D.A. BAVER, J.R. MYRA, Lodestar Research Corporation, M.V. UMANSKY, Lawrence Livermore National Laboratory — The Arbitrary Topology Equation Reader, or ArbiTER, is a flexible eigenvalue code that is under continued development for plasma kinetic problems. The preliminary stage of ArbiTER development has demonstrated its capability in handling complicated geometries (such as multiple X-points) as well as simple kinetic problems. Planned upgrades (such as parallelization and unstructured grids) are expected to expand its range of potential applications. In order to handle large eigenvalue problems produced by realistic kinetic problems, parallelization is necessary. ArbiTER uses the SLEPc [1] eigensolver package, which already has parallel capability, however, early versions of the code lack the structures needed to exploit this capability. Integrating parallel SLEPc into the ArbiTER code is therefore a high priority. In addition, we will also present first physics studies using ArbiTER. This will be analysis of surface-localized phenomena such as coaxial modes, which are relevant to RF heating and current drive in devices such as NSTX. Work supported by the U.S. DOE.

[1] http://www.grycap.upv.es/slepc/

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