

Abstract Submitted
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Couple an ICRF core spectral solver to and edge FEM code¹

JOHN WRIGHT, SYUNICHI SHIRAIWA, MIT - PSFC, RF - SCIDAC TEAM —
The finite element method (FEM) and the spectral approaches to simulation of ion cyclotron (IC) waves in toroidal plasmas each have strengths and weaknesses. For example, the spectral approach (eg TORIC) has a natural algebraic representation of the parallel wavenumber and hence the wave dispersion but does not easily represent complex geometries outside the last closed flux surface, whereas the FEM approach (eg LHEAF) naturally represents arbitrary geometries but does not easily represent thermal corrections to the plasma dispersion. The two domains: thermal core in flux surface and cold edge plasma may be combined in such a way that each approach is used where it works naturally. Among the possible ways of doing this, we demonstrate the method of mode matching. This method provides an easy way of combining the two linear systems without significant modifications to the separate codes. We will present proof of principal cases and initial applications to minority heating.

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John Wright
MIT - PSFC

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