BSC_T: A Tool For Efficient Magnetic Field Computation
JONATHAN HEBERT, JAMES HANSON, Auburn University — The modeling of fusion plasmas requires the accurate modeling of the fields which confine these plasmas. BSC_T is a Fortran module which allows for accurate and expedient computation of these fields from the currents which produce them. Near field producing elements, analytic solutions are used to retain maximum accuracy for geometries such as pure dipoles, infinite line currents, current rings, and finite current segments [1]. At greater distances, series expansions are used to quicken calculation with little loss of precision. More complex geometries may be modeled by arrays of these simple geometries and by current carrying mesh forms. Accuracy and performance benchmarks are presented, as well as reconstructions using the V3FIT code with various vacuum vessel models.

[1] J. D. Hanson and S. P. Hirshman, Phys. Plasmas **9**, 4410 (2002).

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