

IEFIT — An Interactive Approach to High Temperature Fusion Plasma Magnetic Equilibrium Fitting*

Q. Peng, J. Schachter, and D.P. Schissel

General Atomics, P.O. Box 85608, San Diego, California 92185-5608

An interactive IDL based wrapper, IEFIT, has been created for the FORTRAN code EFIT.¹ EFIT is used worldwide in high temperature magnetic fusion research to perform plasma magnetic equilibrium reconstruction. It allows physicists to rapidly optimize a plasma equilibrium reconstruction by eliminating the unnecessarily repeated initialization in the conventional approach along with the immediate display of the fitting results of each input variation. The front end serves as an interface both for taking inputs and presenting results. Upon receiving a re-fit request, it communicates the new inputs to the back-end EFIT. Once the computation is finished, it rapidly processes and displays the results such as magnetic equilibrium, fitting qualities and plasma profiles, with or without the comparison with those of the early settings. It uses a new IDL based graphic package, GaPlotObj, developed in corporation with Fanning Software Consulting, that provides a unified interface with great flexibility in presenting and analyzing scientific data. The overall interactivity reduces the process to minutes from the usual hours. The poster will present the description of the IEFIT and the underlying graphic package.

*Work supported by U.S. Department of Energy under Contract No. DE-AC03-99ER54463.

¹L.L. Lao, H.E. St. John, R.D. Stambaugh, A.G. Kellman, and W. Pfeiffer, Nucl. Fusion **25** (1985) 1611.