

**Abstract Submitted for the 50th Annual Meeting  
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Category Number and Subject: 5.6.2 DIII-D Tokamak

Theory     Experiment

**Development of an IMFIT Current Profile Module and Analysis of Current Profiles in DIII-D,\*** G.Q. Li, *ASIPP*, L.L. Lao, M.S. Chu, G. Abla, H.E. St. John, R. Prater, *GA*, M.A. Makowski, *LLNL*, J.M. Park, M. Murakami, *ORNL*, J.M. Jeon, *ORISE*, Q. Ren, *ASIPP* – A predictive understanding of current profile evolution is crucial for tokamak research. In a tokamak, the current density is composed of an inductive component, a bootstrap current contribution, and a non-inductively driven portion. Accurate determination of these current components from experimental measurements is challenging, particularly in the edge region due to the large contribution of radial electric field to the MSE signals. To facilitate the analysis, a current profile physics module is being developed for integration into the IMFIT tool. IMFIT provides a convenient platform for testing of Ohmic, NBI, FWCD, and ECCD current models against results deduced from experimental measurements. Detailed will be presented including the evolution of the ECCD profiles with and without tearing mode activities from the recent DIII-D counter ECCD resistive MHD experiments.

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