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Category Number and Subject:

[ ] Theory [**x**] Experiment

Determination of ECCD Current Profiles in DIII–D Discharges Using a Local Representation Method,[*] L.L. Lao, J.S. deGrassie, Y.R. Lin-Liu, T.C. Luce, V.S. Chan, C.C. Petty, R. Prater, H.E. St. John, *General Atomics* — A key element of the DIII–D research program is the use of ECCD to control and sustain the current profile for advanced tokamak study. An important issue is the determination of ECCD profiles, both for controlling and for testing theoretical models. Previous results obtained from analysis based on a time series of EFIT equilibrium reconstructions using MSE data showed that the widths of the ECCD profiles are generally broader than those predicted theoretically.[1] There are indications from ECCD transport simulations that the narrower predicted profiles are consistent with the MSE data and the discrepancy is due to the finite spatial resolution and the smooth basis functions used in the reconstruction. To resolve the discrepancy, a representation which allows localized features with strong gradients in the current profile has been implemented in the EFIT equilibrium reconstruction code. Initial results indicate that reconstructions using a local basis function can resolve very peaked ECCD profiles. The reconstrtucted ECCD profiles are consistent with the quasi-linear Fokker-Planck calculations from the CQL3D code.

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[1]T.C. Luce *et al.*, Phys. Rev. Lett. **83** (1999) 4550.

[**x**] Prefer Poster Session
[ ] Prefer Oral Session

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