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Category Number and Subject:

[ ] Theory [**x**] Experiment

Enhanced Current Drive Due to Localized Electron Cyclotron Power Deposition in DIII–D,[*] R.W. Harvey, *CompX*, O. Sauter, *CRPP, Lausanne,* Y.R. Lin-Liu, T.C. Luce, R. Prater, *General Atomics* — Off-axis electron cyclotron current drive (CD) efficiency in the DIII–D tokamak has been observed to exceed calculated results using axisymmetric, Fokker-Planck (FP) theory; preliminary calculations with bounce-averaged FP codes show CD enhancement trapping effects are reduced, as may result from collisions.[1] We examine localized CD efficiency using the non-bounce-averaged CQLP FP code[2] which solves for f($v_{||}$, $v_{\perp}$, distance-s-along-B), including the streaming operator. Electron current is driven by QL diffusion over a small region along B. To complete the circuit, the driven current circulates along B for ~100 turns, given by the (poloidal plasma circumference)/(beam size), a distance of order the mfp. Continuity is maintained by an effective electric field. The resulting modifications of the CD efficiency from the usual bounce-averaged axisymmetric value, including collisional reduction of trapping effects, will be presented.

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[1]T.C. Luce *et al.*, IAEA Fusion Energy Meeting, Japan (1998).
[2]O. Sauter, R.W. Harvey, and F.L. Hinton, Contrib. Plasma Phys. **34**, 169 (1994).

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

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