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Radial Transport Effects on ECCD in the DIII-D and TCV Tokamaks[1] R.W. HARVEY, CompX, R. PRATER, General Atomics, O. SAUTER, P. NIKKOLA, EPFL, Lausanne, Switzerland, — Electron cyclotron current drive experiments in the DIII-D and TCV tokamaks provide excellent data sets for evaluating radial transport effects on the driven current. In the lower power density DIII-D EC experiments quasilinear effects and synergy between the EC current drive (CD) and toroidal electric field are significant, placing experiment in accord with calculations using the CQL3D bounce-averaged Fokker-Planck code,[2] which includes a radial transport model. Radial transport at levels consistent with ITER scaling can double the radial width of the ECCD, although the calculated widths are near the radial resolution limit of the DIII-D MSE diagnostic. For the high power TCV ECCD experiment, both the quasilinear formation of nonthermal distributions and the transport effects are dramatic: For a particular shot,[3] a radial diffusion coefficient consistent with thermal transport levels reduces the quasilinearly calculated CD from 560 kAmps to the experimentally observed ECCD of 104 kAmps.

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[2]C.C. Petty, et al., 14th Conf. on RF Power, Oxnard, California (2001).
[3]O. Sauter, et al., Phys. Rev. Lett. **84**, 3322 (2000).

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☐ Prefer Oral Session
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Special instructions: Poster 27, Stability, MHD, Current Drive, Advanced Tokamak

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