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Simulation of Neoclassical Tearing Mode Suppression by ECCD with the 3D Nonlinear Code NFTC in the DIII–D Tokamak[1] A.M. POPOV, Y.Q. LIU, N.N. POPOVA, Moscow State University, R.J. LA HAYE, A.D. TURNBULL, General Atomics, B.W. RICE, Lawrence Livermore National Laboratory — Nonlinear self-consistent simulations of neoclassical tearing mode suppression by radially localized electron cyclotron current drive (ECCD) are presented. Simulations were performed for DIII–D discharges with a full 3D nonlinear MHD code, NFTC. Neoclassical terms are included in the basic equations for the magnetic field. An effective fully implicit numerical scheme allows the transport profile to evolve self-consistently with the nonlinear MHD instabilities and an externally applied source such as ECCD. The time response and nonlinear evolution of the 3/2 island width for modulated square-wave ECCD and required phasing and period are determined. The CD location with respect to the $q = 3/2$ surface and the width of the spatial distribution are also investigated. The possibility that ECCD may change delta prime directly affecting the 3/2 saturated island or destabilizing the 2/1 mode is also discussed.

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☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: DIII–D Poster Session I (transport, turbulence, & stability), immediately following T Gianakon (U Wisc)

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