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Simulation of the ITER Rampdown Scenario on DIII-D,*
P.A. Politzer, G.L. Jackson, D.A. Humphreys, T.C. Luce, A.W. Hyatt, *General Atomics* — Safe termination of a tokamak discharge becomes increasingly important as the energy stored in the plasma and in the poloidal magnetic field increases (>750 MJ in ITER). In DIII-D, we simulate the initiation, rampup, and rampdown phases of the proposed ITER discharge scenario, to identify potential issues and problems, to mitigate difficulties and to improve performance. The issues for rampdown are maintaining the separatrix strike point locations on the armored divertor, avoiding additional consumption of transformer flux, and maintaining the density and internal inductance within controllable limits while reducing the current to a negligible level. In these experiments dimensions are reduced by a factor of 3.7 and the current by 10 relative to ITER. We have simulated the ITER rampdown scenario to I_p < 1 MA (equivalent) while controlling the strike points to better tolerance than required. The density falls fast enough to avoid density limits, and ℓ_i remains within control limits. The current ramp rate must be increased beyond the ITER reference value to avoid additional flux consumption.

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