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ITER Current Channel Control Under Disturbances and Disruptions with Implications from DIII-D Experiments[1] D.A. HUMPHREYS, N.W. EIDIETIS, T.E. EVANS, A.W. HYATT, J.A. LEUER, P.B. PARKS, E.J. STRAIT, M.L. WALKER, A.S. WELANDER, J.C. WESLEY, GA, L. LODESTRO, L.D. PEARLSTEIN, LLNL, N. COMMAUX, T.C. JERNIGAN, ORNL, E.M. HOLLMANN, A.N. JAMES, J.H. YU, UCSD — Control of the ITER plasma shape and position is challenging due to demanding performance requirements and limitations on superconducting poloidal field (PF) coil capabilities. For example, robust vertical stability in the presence of disturbances such as H-L transitions or ELM's, and following disruption thermal quenches, requires in-vessel Cu coils to augment the PF coils [1]. We analyze the most recent ITER in-vessel coil design for control robustness to expected disturbances and noise, and for control of post-disruption runaway electron (RE) current channels. We report on DIII-D experiments assessing position control for rampdown plasmas and RE channels, and control of RE current amplitude following disruptions using positive and negative applied loop voltage.

[1] Humphreys, D.A., et al., Nucl. Fusion **49** (2009) 115003.

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Dave Humphreys
General Atomics

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