Abstract Submitted
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Sorting Category: 6.6.2 (Experimental)

Predictive Modeling of Halo Currents in Disruptions and Disruption Mitigation Scenarios[1] D.A. HUMPHREYS, A.G. KELLMAN, General Atomics, D.G. WHYTE, UCSD, S. ISHIDA, G. KURITA, JAERI — The success of recent models of disruption halo currents[2] and post-thermal quench radiation power balance[3] offer the hope of accurately predicting halo currents expected in disruptions mitigated by massive gas injection. Such an ability to reliably predict halo currents in rapid shutdown scenarios is of great importance in the design of next-generation tokamaks. The method is illustrated in application of an extensively validated semi-analytic model to prediction of halo currents expected in unmitigated and mitigated disruptions in the JT-60SU device design and the DIII-D tokamak experiment. Implications of specific halo current predictions and the general method itself are discussed.

[1]Work supported by U.S. DOE Contract DE-AC03-99ER54406 and Grant DE-FG03-95ER54294.
[2]D.A. Humphreys, D.G. Whyte, "Classical Resistivity in a Post-Thermal Quench Disrupting Plasma," accepted for publication in Phys. Plasmas.
[3]D.G. Whyte, D.A. Humphreys, P.L. Taylor, "Measurement of Plasma Electron Temperature and Effective Charge During Tokamak Disruption," accepted for publication in Phys. Plasmas.

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☐ Prefer Oral Session
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Special instructions: Disruptions, immediately following M Miah

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