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Scoping Studies of ITER Disruption Halo Currents Using the DINA Code[1] D.A. HUMPHREYS, A.G. KELLMAN, General Atomics, R.R. KHAYRUTDINOV, V.E. LUKASH, TRINITI Laboratory — Calculations of poloidal halo currents resulting from DINA code simulations of ITER vertical displacement events (VDE) and major disruptions are presented. In order to assess the range of halo current amplitudes to be expected in ITER, scoping studies were performed in which the principal parameters influencing disruption halo current evolution, *i.e.*, halo and core plasma temperature and the halo width, were varied over a wide range. The resulting study shows that for 21 MA ITER discharges, the peak poloidal halo current in major disruptions varies from 0.23 MA to 0.70 MA and for VDEs from 0.86 MA to 4.61 MA. In both disruption types, the largest poloidal halo current occurs when the core and halo temperatures are highest and equal with downward-going VDEs producing the largest halo currents. The algorithm used for simulation of VDE halo current evolution is validated through simulation of triggered VDE experiments in DIII–D. Comparisons of VDE scoping studies with predictions of a simple circuit model of halo current evolution show good agreement.

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D.A. Humphreys
humphreys@gav.gat.com
General Atomics

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