

**Abstract Submitted for the 53rd Annual Meeting
Division of Plasma Physics
November 14-18, 2011, Salt Lake City, Utah**

Category Number and Subject: 5.9.0 Simulation and modeling of MC

Session: Research in Support of ITER

☒ Theory ☐ Experiment ☐ Combined/General

Shape and Current Profile Effects on Runaway Electron Confinement,* V.A. Izzo, A.N. James, *UCSD*; D.A. Humphreys, *GA*; R.S. Granetz, D.G. Whyte, G.M. Olynik, *MIT-PSFC* – The potential for several MA of current carried by multi-MeV runaway electrons (REs) during ITER disruptions has motivated a variety of experiments in present-day tokamaks studying RE generation, confinement, and control. In both DIII-D and Alcator C-Mod, different RE behavior is seen in limited vs. diverted plasmas, suggesting better RE confinement for limited shapes. NIMROD simulations of rapid shutdowns in both devices support this finding, and show reduced stochasticity in limited plasma shapes. Integration of RE drift-orbits also shows differences in RE strike-points that are consistent with experimental observations. In DIII-D a wide variation in RE confinement results for diverted discharges may also point to current density profile effects on RE confinement. Several DIII-D diverted discharges are modeled with NIMROD. Confined RE fractions found in NIMROD are mostly consistent with observed RE currents in DIII-D, although other effects, such as seed generation and avalanching may contribute to the experimental variation.

*Work supported by US DOE under DE-FC02-06ER54861, DE-FG02-05ER54809, DE-FG02-07ER54917, DE-FC02-04ER54698 and DE-FG02-04ER54762.