Abstract Submitted for the 55th Annual Meeting
Division of Plasma Physics
November 11–15, 2013
Denver, Colorado

Category Number and Subject:

[ ] Theory [x] Experiment

Imaging Runaway Electrons in Slide-Away and Killer Pellet Discharges in DIII-D,* R.A. Moyer, E.M. Hollmann, V.A. Izzo, *UCSD;* N.W. Eidietis, P.B. Parks, E.J. Strait, J.C. Wesley, *GA*; C. Paz-Soldan, *ORISE*; N. Commaux, *ORNL*; R. Granetz, *MIT* –
Runaway electrons (REs) produced by acceleration of slide-away electrons in very low density ohmic discharges, and by rapid shutdown induced by argon pellets, have been studied by imaging synchrotron emission (SE) from 700–1000 nm, providing new data on the equilibrium and formation physics of RE beams. Trace levels of quiescent RE current (QRE) are produced in ohmic discharges with n_e=4E18/m^3. The synchrotron emission forms 1 or 2 crescents near the q=1.5 and 2 surfaces, which survive fast transients due to low density locked modes. 2mm argon pellets with velocity ~185 m/s produce REs when the pellet is strongly ablated upon reaching the core, forming ~0.5 s long plateaus of several hundred kA when the RE seeds are formed inside ρ~0.35. Discharges in which the pellet survives, passing completely through the plasma to hit the centerpost, do not form enough RE seeds to provide an imageable synchrotron emission in the 700–1000 nm range.

*Work supported by the US DOE under DE-FG02-07ER54917, DE-FC02-04ER54698, DAE-AC05-06OR23100, DE-AC05-00OR22725, DE-FG02-99ER54512.