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Imaging Runaway Electrons in Slide-Away and Killer Pellet Discharges in DIII-D[1] 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, N. COMMAUX, ORISE, 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 $n_e = 4 \times 10^{18}/m^3$. 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.

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