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Runaway electron behavior in the Frascati Tokamak Upgrade (FTU)[1] ZANA POPOVIC, JOSE RAMON MARTIN-SOLIS, Univ Carlos III De Madrid, BASILIO ESPOSITO, DANIELE MAROCCO, FEDERICA CAUSA, PAOLO BURATTI, LUCA BONCAGNI, C. R. ENEA-Frascati, DANIELE CARNEVALE, MATEUSZ GOSPODARCZYK, Universita di Roma, Tor Vergata — Several recent experiments in the FTU tokamak are dedicated to the study of runaway electrons (RE), both in the flattop and disruption phases of the discharge. Experiments have been carried out to evaluate the threshold electric field for RE generation during the flattop of ohmic discharges. The measured threshold electric field during RE electron generation and suppression experiments for a wide range of plasma parameters is found to be ∼2-5 times larger than predicted by the relativistic collisional theory, $E_R = n_e e^3 \ln\Lambda / 4\pi\varepsilon_0^2 m_e c^2$, and is consistent with an increase of the critical field due to the RE synchrotron radiation. Runaway evolution has been numerically simulated using a test particle model including toroidal electric field acceleration, collisions and synchrotron radiation losses. Estimates of RE energy distribution are consistent with the measurements of two recently installed RE diagnostics: HXR-camera and RE Imaging and Spectroscopy (REIS) system.

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