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Runaway electrons in SPARC[1] RA TINGUELY, MIT Plasma Science and Fusion Center, P SVENSSON, M HOPPE, O EMBREUS, T FULOP, Chalmers University, S NEWTON, Culham Centre for Fusion Energy, AJ CREELY, Commonwealth Fusion Systems, R SWEENEY, RS GRANETZ, MIT PSFC, SPARC TEAM

— We explore the evolution and diagnosis of post-disruption runaway electrons (REs) in the SPARC V0 tokamak design [1]. The RE problem may be worsened by high plasma currents ($I_p \sim 7.5$ MA) better confining REs, and compact size ($R_0 \sim 1.65$ m, $a \sim 0.5$ m) leading to faster current quench times. However, the high magnetic field ($B_0 \sim 12$ T) will increase synchrotron power loss, $> 5\times$ higher than ITER. The code GO [2] is used to model the electric field and RE current profiles during realistic SPARC disruption scenarios. Scans are performed in post-disruption plasma temperature, thermal quench time, and pre-disruption elongation. The kinetic equation solver CODE [3] is used to evolve the RE momentum space distribution function, giving expected energies of the RE plateau. Recent findings from *quiescent* RE experiments in Alcator C-Mod indicate that the spectra, polarization, and images of RE synchrotron radiation can give insight into RE energy, pitch angle, and spatial distributions, respectively [4-6].

[1] Greenwald 2018 PSFC/RR-18-2 [2] Smith 2006 PoP 13 [3] Landreman 2014 CPC 185 [4] Tinguely 2018 NF 58 [5] Tinguely 2019 NF accepted [6] Tinguely 2018 PPCF 60

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