

Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Modeling Atomic and Molecular Plasma Processes During Startup of PFRC-2 GRANT RUTHERFORD, Brown University, EUGENE EVANS, SAMUEL COHEN, Princeton Plasma Physics Laboratory — To study how initial conditions of PFRC-2, a reversed-field configuration device at Princeton, affect startup and the relative importance of different processes during startup, we constructed and solved a 0D model as an initial value problem. Incorporated into the model are hydrogen processes using collisional radiative rate coefficients taken from EIRENE, charged particle loss due to flow parallel to B, enhanced confinement from mirror fields and the FRC, electron interactions with the ends of the machine, and subsequent generation of nonthermal, high energy electrons. By solving the model we obtain electron density and energy as a function of time and can determine the delay to densification. Additionally, we present trends in these outputs as functions of major machine inputs, namely: P_{in} , n_H , τ_e , and B .

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Date submitted: 10 Jul 2020

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