Abstract Submitted
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Long-pulse operation of the PFRC-2 device[1] S.A. COHEN, B. BERLINGER, C. BRUNKHORST, C.E. MYERS, Princeton Plasma Physics Lab, M.R. EDWARDS, Mechanical and Aerospace Engineering Dept, Princeton University — Studies of the time dependence of plasma density in long-duration plasma pulses were performed in the PFRC-2, a field-reversed-configuration device heated by odd-parity rotating magnetic fields. Long-pulse operation is made possible by a set of 8 superconducting internal passive flux-conserving rings, each with an inductive decay time of 1 sec and a critical current of 3 kA. With prefill hydrogen gas only, the line-average density rose to 2e12 cm^{-3} in 1 ms and decayed to near 0 in about 10 ms. Using a PV-10 gas valve modified to provide supersonic gas injection, we have found operational regimes where in-discharge fueling with a single 10-ms-duration hydrogen puff produced stable high density (2e12 cm^{-3}) plasma discharges that persisted for 200 ms.

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