

## **Long-pulse operation of the PFRC-2 device**

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Studies of the time dependence of plasma density, photon emission, power coupling, and fluctuation levels 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 eight 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  $2 \times 10^{12} \text{ cm}^{-3}$  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 1-ms-duration hydrogen puff produced stable high density ( $2 \times 10^{12} \text{ cm}^{-3}$ ), warm ( $T_e > 200 \text{ eV}$ ) plasma discharges that persisted for over 200 ms.

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