

Abstract Submitted
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Two-fluid model of rf current condensation in magnetic islands¹

SUYING JIN, ALLAN REIMAN, NATHANIEL FISCH, Princeton Plasma Physics Laboratory — RF current condensation can stabilize NTMs in tokamaks with less total power and with less localization of the power [1]. The condensation effect relies on positive feedback between the RF deposition and the resulting island temperature perturbation governed by diffusion. The temperature diffusion has previously been modeled with single-fluid approaches [2,3]. However, in regimes where the ion and electron temperatures are not perfectly coupled, qualitatively new physics is introduced. [1] A. H. Reiman and N. J. Fisch, “Suppression of tearing modes by radio frequency current condensation,” *Phys. Rev. Lett.* 121, 225001 (2018) [2] E. Rodríguez, A. H. Reiman, and N. J. Fisch, “Rf current condensation in magnetic islands and associated hysteresis phenomena,” *Phys. Plasmas* 26, 092511 (2019). [3] S. Jin, N. J. Fisch, and A. H. Reiman, “Pulsed RF schemes for tearing mode stabilization” *Phys. Plasmas* 27, 062508 (2020).

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