

Abstract Submitted
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RF current condensation in magnetic islands and associated hysteresis phenomena¹ EDUARDO RODRIGUEZ, ALLAN REIMAN, NATHANIEL FISCH, Princeton Plasma Physics Laboratory — The nonlinear RF current condensation effect suggests that magnetic islands might be well controlled with broader deposition profiles than previously thought possible [1]. To assess this possibility, a simplified energy deposition model in a symmetrised 1D slab geometry is constructed. By limiting the RF wave power that can be absorbed through damping, this model describes also the predicted hysteresis phenomena. Compared to the linear model, the nonlinear effects lead to larger temperature variations, narrower deposition widths, and more robust island stabilisation. Although, in certain regimes, the island centre can be disadvantageously shaded because of the nonlinear effects, in general, the RF condensation effect can take place, with current preferentially generated, advantageously, close to the island centre. [1] A. H. Reiman and N. J. Fisch, Phys. Rev. Lett. 121, 225001 (2018).

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Eduardo Rodriguez
Princeton Plasma Physics Laboratory

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