Abstract Submitted
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Convective Radial Energy Flux Due To Resonant Magnetic Perturbations[1] FRANCISCO ALBERTO MARCUS, Institute of Physics at University of São Paulo, PETER BEYER, GUILLAUME FUHR, ARNAUD MONNIER, SADRUDDIN BENKADDA, Aix-Marseille Université — With the resonant magnetic perturbations (RMPs) consolidating as an important tool to control the transport barrier relaxation, the mechanism on how they work is still a subject to be clearly understood. In this work we investigate the equilibrium states in the presence of RMPs for a reduced MHD model using 3D electromagnetic fluid numerical code (EMEDGE3D) with a single harmonic RMP (single magnetic island chain) and multiple harmonics RMPs in cylindrical and toroidal geometry. Two different equilibrium states were found in the presence of the RMPs with different characteristics for each of the geometries used. For the cylindrical geometry in the presence of a single RMP, the equilibrium state is characterized by a strong convective radial thermal flux and the generation of a mean poloidal velocity shear. In contrast, for toroidal geometry the thermal flux is dominated by the magnetic flutter. For multiple RMPs, the high amplitude of the convective flux and poloidal rotation are basically the same in cylindrical geometry, but in toroidal geometry the convective thermal flux and the poloidal rotation appear only with the islands overlapping of the linear coupling between neighbouring poloidal wavenumbers m, $m-1$, $m+1$.

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