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Existence of single helicity ohmic states in the RFP DOMINIQUE ESCANDE, des Interactions Ioniques et Moléculaires CNRS, D. BONFIGLIO, S. CAPPELLO, P. ZANCA, Consorzio RFX — The existence of ohmic single helicity (SH) stationary states for the reversed field pinch (RFP), a longstanding issue [1,2,3,4], is analytically proved in the frame of resistive MHD in cylindrical geometry by using perturbation theory for a paramagnetic pinch with a low edge axial magnetic field. A necessary criterion for this existence involves the radial profile of the logarithmic derivative of the Newcomb eigenfunction of the pinch. It suggests that imposing the radial magnetic field to vanish at the plasma edge is not optimal. Numerical simulations with the SpeCyl code check the dependence of the SH RFP states on the boundary radial magnetic field. The existence criterion is checked against the data of RFX-mod discharges in quasi SH states.

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