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Pressure driven tearing modes in the Reverse Field Pinch

ROBERTO PACCAGNELLA, Consorzio RFX and CNR — In a recent paper [1] experimental measurements of magnetic field perturbations in the RFX-mod Reverse Field Pinch device has been compared with stability calculations and interpreted as resistive g modes. In this paper a deeper analysis reveals that the modes discussed in [1] although as correctly stated in the paper are effectively mainly driven by the pressure gradient, they have a clear tearing parity. We analyze the dependence of the growth rate of these modes on several physical parameters including the Lundquist number, S , the plasma beta and also the changes in the equilibrium current and pressure profiles. The work confirms a previously published result [2] showing that these modes are converted to ideal interchange instabilities at very high beta.

[1] Zuin M. et.al. , Nucl. Fusion 50 (2010) 052001.

[2] Merlin D. et.al., Nucl. Fusion 29 (1989) 1153.

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