

Abstract Submitted
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MHD modes rotation and locking threshold studies in ITER-like plasmas VADIM YANOVSKIY, PAOLO ZANCA, ROBERTO PACCAGNELLA, Consorzio RFX — The non-linear dynamics of rotating tearing modes electromagnetically interacting with conducting shell is simulated for the parameters expected in ITER and their locking thresholds are calculated. The work is motivated by the fact that the relatively slow mode rotation during disruptions is considered to be particularly dangerous in ITER for its possible large detrimental effect through the excitation of a resonant response of the mechanical structures. The study is based on a simple cylindrical model for the evolution of the rotating MHD modes determined by the Rutherford equation, their coupling to the plasma flow and to the resistive wall. The modelling reveals the conditions under which the modes are likely to rotate or to lock during disruptions events. In addition, the comparison with the results obtained in nonlinear 3D plasma simulations is performed.

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