

The phenomenology of reconnection events in the reversed field pinch

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Abstract:

The phenomenology of reconnection events, associated to relaxations in high-current (~1.5 MA) plasmas of the reversed-field pinch device RFX-mod, is shown. Each relaxation event can be described as a series of stages starting in the core and propagating towards the plasma edge. In an initial stage (trigger), the evolution of the q profile brings resonant layers closer together, allowing for an interaction of the current sheets associated to tearing modes at the respective rational values of q . The phase locking of the resonant modes then initiates their connection process that, once started, changes the magnetic topology bringing the initially helical state to a more chaotic configuration.