Contribution ID: **3081** Type: **not specified**

P1.1036 Numerical studies of nonlinear growth of double tearing modes in cylindrical geometry

Monday, 8 July 2019 14:00 (2 hours)

See the full abstract here:
http://ocs.ciemat.es/EPS2019ABS/pdf/P1.1036.pdf

Double tearing mode (DTM) is an important kind of magnetohydrodynamics (MHD) instability that often occurs with reversed central magnetic shear configuration in tokamak discharges. A 5th order Weighted Essentially Non-Oscillatory (WENO) scheme is applied to build up a new numerical nonlinear MHD code based on a conservative perturbed MHD model in cylindrical geometry. After careful benchmark between the new initial value code with eigenvalue codethe new code is successfully applied to the nonlinear study of double tearing mode in cylindrical geometry. The formation of plasmoids is found in high Lundquist number regime in such configurations for the first time. Long and thin Sweet-Parker (SP) current sheets are formed near the original inner and outer rational surfaces and become tearing unstable for a large enough Lundquist number. The system can eventually saturate at a quasi-stationary state with small island pairs. The details will be presented.

This work is supported by the National Key R&D Program of China under Grant No. 2017YFE0300402 and the National Natural Science Foundation of China under Grant Nos. 11475219, 11775268.

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Presenter: GUO, W. (EPS 2019)

Session Classification: Poster P1

Track Classification: MCF