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TH/P2-28: Use of the 3D-MAPTOR Code in the Study of Magnetic Surfaces Break-up due to External Non-Axisymmetric Coils

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We show how the outer magnetic surfaces can be broken up in a spherical tokamak, by breaking the axisymmetry using an inner tilted coil. The configuration chosen for this work is that of the MEDUSA small spherical tokamak, a small glass chamber device, which allows the introduction of such a coil. The simulation is carried out with the 3D-MAPTOR code developed by the authors. Given an initial condition for the magnetic field, it is integrated from the plasma current profile and the external currents, such as the toroidal and the vertical field. Poincaré maps along the toroidal angle and the image of the field, as seen from above can be plotted. The latter allows the identification of parameters for which the ripple effect is significant.

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