

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

3DMAPTOR Code for mapping toroidal magnetic field lines in three dimensions ESTEBAN CHÁVEZ, Instituto Nacional de Investigaciones Nucleares, JULIO HERRERA, Instituto de Ciencias Nucleares, UNAM — A 3-D code has been developed in order to simulate the magnetic field lines in circular cross-section tokamaks. The toroidal magnetic field can be obtained from the individual fields of circular coils arranged around the torus, or alternatively, as a ripple-less field. The poloidal field is provided by a given toroidal current density profile. Proposing initial conditions for a magnetic field line, it is integrated along the toroidal angle coordinate, and Poincaré maps can be obtained at any desired cross section plane. Following this procedure, the code allows the mapping of magnetic field surfaces for the axisymmetric case. For this work, the density current profile is chosen to be bell-shaped, so that realistic safety factor profiles can be obtained. This code is used in order to study the breaking up of external surfaces when the symmetry is broken by an inner coil with tilted circular loops, with the purpose of modelling the behaviour of ergodic divertors, such as those devised for TEXTOR.

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Date submitted: 23 Jul 2007

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