



Equilibrium and Fast Particle Confinement in 3D Tokamaks with Toroidal Rotation TH/P7-13

- Three-dimensional free-boundary tokamak equilibria with toroidal plasma rotation are computed numerically.
- Helical core deformations with characteristics of saturated ideal MHD internal kinks modes are described as a novel 3D MHD bifurcated equilibrium state under hybrid scenario conditions that model Long-Lived Modes and Snakes.
- Boundary displacements induced by the internal MHD structures are sensitive to the magnitude of the edge bootstrap current and the size of the core distortions.
- $n = 1$ Error Field Correction Coils in JET enhance slightly the edge modulation of the plasma.
- Toroidal rotation, controlled by the Mach number on axis M_0 , displaces the plasma column radially outward due to the centrifugal force, but does not significantly alter the boundary corrugation.

