## Abstract Submitted for the DPP15 Meeting of The American Physical Society

Shaping of the plasma column in a small aspect ratio tokamak JULIO HERRERA, ISMAEL ARROYO, Univ Nacl Autonoma de Mexico, ESTE-BAN CHAVEZ, Instituto Nacional de Investigaciones Nucleares — This is a followup to the work presented in last year's meeting, on the conceptual design of a small aspect ratio tokamak of variable configuration. The base parameters for this device would be similar to those in the START tokamak. The shaping of the plasma column is known to have important effects in the plasma performance, including the value of  $\beta$ , bootstrap currents, and intrinsic rotation. The main feature being explored here is the inclusion of independent control coils in the inboard and outboard sides; six in the first case, and up to seven in the latter. By varying the strength in their currents it is possible to achieve a wide variety of shapes: elliptical, conventional D-shape, inverse D-shape, and Bean-shape. As the control coils are activated, the strength of the toroidal magnetic field needs to be weakened, in order to keep reasonable values of the safety factor q. The study presented here is made by means of the 3D-MAPTOR code, which produces the Poincaré maps of the magnetic field lines, given the currents. For this purpose, a seed plasma current must be provided. All studies presented here assume equatorial symmetry, due to limitations in the code.

> Julio Herrera Univ Nacl Autonoma de Mexico

Date submitted: 24 Jul 2015 Electronic form version 1.4