

Abstract Submitted  
for the DPP11 Meeting of  
The American Physical Society

**Development of an Internal Helicon Source for the TORPEX Simple Magnetized Torus** M. GILMORE, University of New Mexico, I. FURNO, P. MARMILLOD, Centre de Recherches en Physique de Plasmas, EPFL, Lausanne, Switzerland, THE TORPEX TEAM — A new helicon plasma source is being developed for the TORPEX device in order to expand the range of accessible plasma parameters. TORPEX (Toroidal Plasma Experiment) is a Simple Magnetized Torus with major radius 1 m, and minor radius 20 cm, well-suited to basic plasma physics studies such as on intermittent turbulence and transport, and fast ion-turbulence interaction dynamics. Currently, TORPEX operates with a 2.45 GHz microwave source, which produces plasmas with average  $n \sim 10^{15} - 10^{17} \text{ m}^{-3}$  and  $T_e \sim 10$  eV, at  $B_{tor} \sim 775$  G on axis, via electron cyclotron and upper hybrid resonance absorption. The new helicon source, which will be internal to the vacuum chamber, is expected to produce plasmas with average  $n \sim 10^{18} - 10^{19} \text{ m}^{-3}$  and  $T_e \sim 5$  eV over a wide range of  $B_{tor}$ . Initial results from an  $m = 0$  antenna in TORPEX, as well as results from a parallel internal antenna development in the linear HelCat device at the University of New Mexico are presented.

Mark Gilmore  
University of New Mexico

Date submitted: 14 Jul 2011

Electronic form version 1.4