Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Instabilities, blobs and transport in TORPEX simple magnetized toroidal plasmas[1] A. FASOLI, I. FURNO, D. IRAJI, B. LABIT, G. PLYUSHCHEV, P. RICCI, C. THEILER, CRPP-EPFL, CH-1015 Lausanne, Switzerland, A. DIALLO, ANU, Canberra, ACT 2602 Australia, S. MULLER, UCSD CA 92093, M. PODESTA, UCI CA 92697, F. POLI, Warwick University, UK — Basic properties of fluctuations, turbulence and related transport are investigated in the basic device TORPEX via high-resolution measurements of plasma parameters and fields, obtained using fixed probe arrays, conditionally sampled data from movable probes and a fast framing optical camera. Drift or interchange instabilities dominate the fluctuation spectra, depending on the vertical magnetic field. The influence of the instability nature on the nonlinear development into plasma blobs is studied, along with the fluctuations statistics. Blobs are observed to generate electric fields and related flow patterns self-consistently, to cause particle transport, and to influence the plasma angular momentum. Two confinement regimes, akin to tokamak L and H mode, are theoretically predicted. Investigations are under way to identify these regimes in terms of the same observables in experiments and simulations. Other ongoing research lines, such as control of turbulent structures using in-vessel limiters, and the effect of turbulence on supra-thermal ions, will be discussed.

[1]Partly supported by the Swiss National Science Foundation.

Ambrogio Fasoli
CRPP-EPFL, CH-1015 Lausanne, Switzerland

Date submitted: 08 Jul 2008 Electronic form version 1.4