Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Biased Electrode H-modes on the HBT-EP Tokamak[1] N. STILLITS, J.M. HANSON, A. KLEIN, Y. LIU, M.E. MAUEL, D.A. MAURER, G.A. NAVRATIL, T.S. PEDERSEN, Columbia University — An attractive route to higher performance plasmas for small tokamaks is through H-mode confinement improvements brought about by electric fields generated using an electrode inserted into the plasma edge. We have installed a simple mushroom-cap Molybdenum electrode to bias the HBT-EP plasma edge up to 400V with respect to vacuum chamber ground, and bias-induced H-modes are now routinely obtained. In order to characterize the edge plasma parameters further during biasing experiments, a multi-pin triple probe array has been constructed to allow radially and temporally resolved measurements of the evolving electron temperature, density, and plasma potential profiles at four spatial points in the edge. In recent experiments, H-mode characteristics have been measured by means of this multi-pin triple probe array. From this data, a cause and effect relationship between the plasma turbulence, flow shear, and gradients in, e.g., plasma temperature and density is examined. Furthermore, comparisons with quantitative theories are performed. Analysis of these data and results will be presented.

[1]Supported by U.S. DOE Grant DE-FG02-86ER53222

N. Stillits
Columbia University

Date submitted: 25 Jul 2005 Electronic form version 1.4