

Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Edge Kink Mode Fluctuation Measurements on HBT-EP D. SHIRAKI, B. DEBONO, J.M. HANSON, R. JAMES, J.P. LEVESQUE, M.E. MAUEL, D.A. MAURER, G.A. NAVRATIL, T.S. PEDERSEN, Columbia University — The edge plasma region of the Columbia HBT-EP tokamak is well instrumented to study perturbations induced by MHD activity. Internal fluctuation diagnostics with good radial spatial resolution include a 20 element Hall probe array, 16-chord D_α emission detector, and a newly designed 4 spatial point combined triple probe/Mach probe array. Also available is an extensive set of external magnetic pickup probes for magnetic mode structure analysis. The design of the Mach probe array allows measurement of the plasma flow in two orthogonal directions. The initial design of the triple/Mach probe array is discussed and plans presented for an improved future design. The amplitude, phase, and frequency of the external kink mode magnetic fluctuation are calculated as a function of time by a Hilbert transform method. The phase relationships between the kink induced temperature and density perturbations and the mode magnetic perturbation have been measured. Triple/Mach probe measurements also allow reconstruction of the local ExB, ion fluid, and the electron diamagnetic flow frames of reference. External magnetics will be used to quantify the kink mode rotation rate and a detailed study of its relation to the ExB, ion, and electron fluid flow frames will be presented. *Supported by U.S. DOE Grant DE-FG02-86ER53222

Diasuke Shiraki
Columbia University

Date submitted: 19 Jul 2008

Electronic form version 1.4