Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

HBT-EP Kink Mode Control Research: Progress and Future Plans[1] G.A. NAVRATIL, B.A. DEBONO, J.M. HANSON, J.P. LEVESQUE, K.D. LITZNER, M.E. MAUEL, D.A. MAURER, T.S. PEDERSEN, D. SHIRAKI, J. BIALEK, A.H. BOOZER, O. KATSURO-HOPKINS, Columbia University, R. JAMES, U.S. Coast Guard Academy/Stevens Institute of Tech., S.F. PAUL, Princeton University — The High Beta Tokamak-Extended Pulse (HBT-EP) kink mode control research program is addressing critical key issues related to the suppression of the kink mode as a performance limiting instability of fusion devices. Current main research thrusts include: (i) studying advanced feedback control algorithms based on Kalman type filters, (ii) the installation of a new resistive wall and feedback coil set to measure ITER relevant internal control coil configurations and their effect on kink rigidity, and (iii) quantification of the role of neutral damping on resistive wall mode (RWM) dissipation mechanism physics using Li gettering to reduce charge exchange losses in the plasma edge. Recent experimental results on the effectiveness of a Kalman filter based feedback controller, design of the new segmented wall and small coverage control coils, a novel Li evaporator design, along with other diagnostic measurement improvements aimed at furthering our understanding of kink mode behavior will be reported and discussed.

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

David Maurer
Columbia University

Date submitted: 22 Jul 2007 Electronic form version 1.4