Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

**Investigation of MHD instabilities and their dependence on plasma rotation in KSTAR*** Y.S. PARK, S.A. SABBAGH, J.W. BERKERY, J.M. BIALEK, Columbia University, Y.M. JEON, S.H. HAHN, J. KIM, K.-I. YOU, S.G. LEE, J.G. BAK, K.D. LEE, W.H. KO, Y.S. BAE, NFRI, Korea — A goal of the Korea Superconducting Tokamak Advanced Research (KSTAR) is to perform physics studies in support of ITER. With co-directed neutral beam injection, one expected difference between KSTAR and ITER is the degree and profile of the plasma rotation, which affects plasma stability. The present work examines instabilities that exist in KSTAR under plasma rotation conditions spanning the entire KSTAR operational space. Mode characteristics measured by electron cyclotron emission are compared to values computed from reconstructed plasma equilibria. Frequencies of the modes tied to plasma rotation are compared to measurements from an X-ray crystal spectrometer and charge exchange recombination spectroscopy. A first experiment producing non-resonant alteration of the plasma rotation profile by neoclassical toroidal viscosity will be attempted to access a low rotation operating space most applicable to ITER and examine the dependence of beta-limiting instabilities on rotation and rotation shear. Proximity of this new operational regime to MHD stability limits will be examined, as well as implications for n = 1 feedback stabilization planned for future KSTAR operation. *Work supported by U.S. DOE grant DE-FG02-99ER54524.

Young Seok Park
Columbia University

Date submitted: 15 Jul 2011 Electronic form version 1.4