Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Trapped Particle Instability in Kinetic Stabilized Tandem Mirror
HERBERT BERK, JANE PRATT, IFS, UT Austin — The kinetic stabilizer tandem mirror (KSTM) devised by R. F. Post (J. Fus. Energy 2007) is an innovative concept devised to stabilize a symmetric tandem mirror machines using a concept devised by D. Ryutov (Proc. of Course and Workshop, Varenna, Italy, 1987) and empirically verified in the Gas Dynamic Trap (Ivanov, et. al. Trans. Fusion Technology 39, 127, 2001). The KSTM uses the momentum flux of unconfined particles that only sample the outer end regions of the mirror where there is very favorable field line curvature. Charged ion beams at relatively low energy are externally injected into the ends and reflected out from the ends. MHD stability with a power drain less than the fusion power production can be achieved. We examine the effect of fast growing trapped particle instability (Berk et. al. Sov J. Plasma Phys. 1983) on the overall stability. In this case stability is very sensitive to the electron connection between the stabilizer and end plug.

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Date submitted: 23 Jul 2009 Electronic form version 1.4