Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Rossby Wave Instability in Astrophysical Disks RICHARD LOVELACE, Cornell Universtity, HUI LI, LANL — A brief review is given of the Rossby wave instability in astrophysical disks. In non-self-gravitating discs, around for example a newly forming stars, the instability can be triggered by an axisymmetric bump at some radius r0 in the disk surface mass-density. It gives rise to exponentially growing non-axisymmetric perturbation (proportional to Exp[imϕ], m = 1,2,...) in the vicinity of r0 consisting of anticyclonic vortices. These vortices are regions of high pressure and consequently act to trap dust particles which in turn can facilitate planetesimal growth in protoplanetary disks. The Rossby vortices in the disks around stars and black holes may cause the observed quasi-periodic modulations of the disk's thermal emission. Stirling Colgate's long standing interest in all types of vortices - particularly tornados - had an important part in stimulating the research on the Rossby wave instability.

Richard Lovelace
Cornell Universtity

Date submitted: 16 Jul 2014 Electronic form version 1.4