Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Linear stability of inviscid free surface parallel shear flows[1]
YURIKO RENARDY, MICHAEL RENARDY, Dept of Mathematics, Virginia Tech
— We study the linear stability of a class of inviscid parallel shear flows of finite depth with a free surface at the top boundary and a wall at the bottom boundary. We include gravity, but not surface tension. Sample velocity profiles include Poiseuille flow and the hyperbolic tangent shear layer. We determine stability boundaries with respect to the wavenumber of the perturbation, and the relationship of the neutral limiting modes to the velocities at the bottom, at extrema of the baseflow and at inflection points.

[1]Funded by NSF DMS.

Yuriko Renardy
Dept of Mathematics, Virginia Tech

Date submitted: 06 Aug 2011 Electronic form version 1.4