Roman Shvydkoy* (shvydkoy@uic.edu). *On the Rayleigh-Taylor instability in presence of a background shear.*

In this talk we revisit the classical subject of the Rayleigh-Taylor instability in presence of an incompressible background shear flow. We derive a formula for the essential spectral radius of the evolution group generated by the linearization near the steady state and reveal that the velocity variations neutralize shortwave instabilities. The formula is a direct generalization of the result of H. J. Hwang and Y. Guo in the hydrostatic case. Furthermore, we construct a class of steady states which posses unstable discrete spectrum with neutral essential spectrum. The technique involves the WKB analysis of the evolution equation and contains novel compactness criterion for pseudo-differential operators on unbounded domains. (Received January 10, 2019)