1171-35-44 Ming Chen*, Department of Mathematics, Pittsburgh, PA 15260, and Samuel Walsh. Orbital stability of internal waves.

I will discuss the nonlinear stability of capillary-gravity waves propagating along the interface dividing two immiscible fluid layers of finite depth. The motion in both regions is governed by the incompressible and irrotational Euler equations, with the density of each fluid being constant but distinct. We prove that for supercritical surface tension, all known smallamplitude localized waves are (conditionally) orbitally stable in the natural energy space. Moreover, the trivial solution is shown to be conditionally stable when the Bond and Froude numbers lie in a certain unbounded parameter region. For the near critical surface tension regime, we show that one can infer conditional orbital stability or orbital instability of small-amplitude traveling waves solutions to the full Euler system from considerations of a dispersive PDE similar to the steady Kawahara equation. This is joint work with S. Walsh. (Received August 06, 2021)