1116-76-621 **Benjamin F Akers*** (benjamin.akers@afit.edu), The Air Force Institute of Technology, WPAFB, OH 45433. *Extremely Steep Traveling Interfacial Waves.*

New methods for computing extremely steep traveling waves at the interface between two fluids are presented. These waves are periodic solutions of the vortex sheet formulation of the potential flow equations. The traveling wave ansatz is developed for such interfaces when parameterized by arclength (Akers, Ambrose & Wright, 2013). Traveling waves are computed which have overturned interfaces. Numerical continuation methods are used to compute the surfaces, in parameter space, where these traveling waves exist. The globally largest traveling water wave is computed (Akers, Ambrose & Wright, 2014). The role of local and global bifurcation theorems in computational explorations of parameter space are highlighted. Three-dimensional computations are discussed. (Received September 09, 2015)