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Simulations of Density-Stratified Kelvin-Helmholtz Instability in the Inclined Channel LYUDMYLA BARANNYK, ROBERT KRASNY, University of Michigan — A system of two incompressible inviscid immiscible fluids of different densities shearing one past another in the inclined channel is considered. The first approach uses a boundary integral representation in which the fluid interface is approximated by a free vortex sheet and the channel walls by bound vortex sheets. Another approach models walls as source sheets. The behavior of the interface between fluids with small density variation (Boussinesq regime) as well as with full density jump is studied numerically using the vortex blob method. The goal is to simulate the flow in the inclined channel and compare the numerical results within two models as well as with the experimental results obtained by Thorpe [J. Fluid Mech. 46 (1971) 299–319].

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