

## Abstract

Linear superharmonic stability analysis of nonlinear short-crested gravity interfacial waves between two semi-infinite fluids is numerically investigated. Like short-crested free surface waves, superharmonic instabilities correspond to the harmonic resonance phenomenon. The basic flow is calculated with a perturbation method and expansions are summed using Padé approximants. It is found that these instabilities develop near the poles due to harmonic resonance. The obtained results show that the instability of maximal growth rate develops for a density ratio  $\mu=0.08$  and occurs sporadically. In addition, for  $\mu=0.34$ , the maximum growth rate is negligible and hence, for this value the short-crested interfacial waves are stable to superharmonic perturbations.