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Adiabatic evolution of coupled surface and internal waves

I discuss the dynamics of interacting surface and internal water waves over a slowly varying random bottom. Signature of such waves has been observed in pictures from the space station. The motion of the interacting waves is described by a system of coupled Schroedinger-Korteweg-de Vries equations. In the presence of a slowly varying random bottom, the coupled waves evolve adiabatically over a long time scale. The analysis covers the cases when the surface wave is a stable bound state or a long-lived metastable state.