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Bloch spectrum for water waves

lundi 2 septembre 2019 09:00 (45 minutes)

We examine the motion of the free surface of a body of fluid with a periodically varying bottom. We consider the water wave system linearized near a stationary state and develop a Bloch theory. The analysis takes the form of a spectral problem for the Dirichlet–Neumann operator in a fluid domain with a periodic bottom and a flat surface elevation. We find that, generically, the presence of the bottom results in the splitting of double eigenvalues creating a spectral gap. The analysis is uniform in the spectral parameter and provides the gap asymptotics.

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