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Edge waves in a rotating stratified fluid STEFAN LLEWELLYN SMITH, MAE, UCSD, ALEXANDER ADAMOU, RICHARD CRASTER, Imperial College London — We examine trapped edge waves on a fluid layer overlying general one-dimensional topography and study the effects of rotation and stratification on the trapping. The problem is inherently of interest in oceanography, but it is also a canonical example of wave trapping that can also arise in elasticity, acoustics and quantum waveguides. The underlying eigenvalue problem is non-trivial to solve numerically as the eigenvalue arises in both the boundary conditions and the governing equations, and so we develop an accurate and efficient scheme to overcome the difficulties. The numerical solutions are complemented by an asymptotic study in which a modified WKBJ approach is developed that is uniform not just at caustics and shorelines, but also uniform in range. This general approach can be used to reduce much of the algebra usually associated with uniform asymptotics and should be of widespread utility.

Stefan Llewellyn Smith
MAE, UCSD

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