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Spectrum of internal waves in bounded domains of the Atmosphere and the Ocean
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We consider the spectral properties of internal waves for three-dimensional compressible rotating exponentially stratified fluid. This model describes the flows in the Atmosphere and the Ocean which include simultaneously the rotation of the Earth over the vertical axis, and the non-homogeneous initial stratification of density caused by the gravitational force. We obtain theoretical results for the spectrum of the resulting internal waves in terms of its structure, localization, and its possible usage in computational algorithms. The applications of the spectral properties of such internal waves can be found, in particular, in the models of the resonance effect. We consider both the general case of bounded domains, and the explicit results of some particular domains, such as cubes and cylinders.

キーワード: computational fluid dynamics, compressible fluid, rotating stratified fluid, essential spectrum, internal waves, fluid dynamics of the Atmosphere and the Ocean
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