



Numerical Simulation of Internal Waves Generated by the Flow and an Isolated Seamount in the Stratified Liquid

Vasily Maximov (1) and Sergey Kshevetskii (2)

(1) Saint-Petersburg State University, Faculty of Applied Mathematics & Control Processes, Saint-Petersburg, Russian Federation (wmaximov@mail.ru), (2) Kant Baltic Federal University, Theoretical Physics, Kaliningrad, Russian Federation (spkshev@gmail.com)

The problem of internal wave generation by incident flow interacting with a seamount is considered.

The full Euler equations for the numerical simulation of this process are used.

The full-conservative numerical method of the second order is used to solve the problem under consideration.

Three types of liquid stratification increasing with depth are proposed: 1. exponential growth, 2. linear increase, 3. piecewise linear increase.

Characteristics of internal waves depending on the flow velocity are studied.

The flow function, the density, the horizontal and vertical velocity as the functions of time are simulated and examined.

The dynamics of vortex structures arising from the flow over the seamount also studied.

Preliminary conclusions about the effect of the type of stratification of the liquid on the transformation of internal waves are derived.