



## Numerical analysis of internal waves in stratified wake flows

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### ABSTRACT

In laboratory investigations, increased attention has been given to internal waves generated by stationary placed oscillating sources and moving bodies in stratified fluids [1]. The main attention was paid to study flows past bodies of perfect shapes like sphere [2], cylinder [3] of thin strip [3] which are the best theoretical (analytical or numerical) studies. Due to simplicity of geometry, flow around a strip has a potential to investigate separately effects of a drag and lift forces on the body by changing the slope of the horizontally moving strip which can be placed vertically [1], horizontally [2], or be tilted under some angle to the direction of towing velocity [5].

Numeric modeling of a flow past vertical strip uniformly towing with permanent velocity in horizontal direction in a linearly stratified tank which was based on a finite differences solver adapted to the low Reynolds Navier-Stokes equation with transport equation for salinity (LES simulation [6] and RANS [7]) has demonstrated reasonable agreement with data of Schlieren visualization, density marker and probe measurements of internal wave fields.

The chosen test cases allowed demonstrating the ability of selected numerical methods to represent stably stratified flows over horizontal strip [4] and hill type 2D obstacles [1, 3] with generation of internal waves.

### ACKNOWLEDGMENTS

This research work was supported by the Region Provence Alpes Côte d'Azur – Modtercom project. The work was also supported by the Russian Foundation for Basic Research (grant 12-01-00128).

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