

SCG086-P11

Room: コンベンションホール

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Fluid Dynamics near the Bottom of the Ocean

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We consider the mathematical properties of a solution of a system of partial differential equations modelling 3-dimensional flows in the Ocean taking into account the gravity force.

Due to the non-homogeneous distribution of density of the Ocean, there appear remarkable internal waves.

We investigate the explicit mathematical representation of the solution, which contains the three components of the velocity field, and the scalar fields of the pressure and the density of the flow. We consider a boundary value problem for the half-space, where the boundary is the Bottom of the Ocean.

In the proximity of the Ocean Floor we investigate analytically the "Boundary Layer" phenomena: the velocity of decay of the Ocean Stream near the Bottom of the Ocean is different from the rate of decay in other internal domains of the ocean. That difference can be visualized analytically as a function of proximity to the Ocean Floor.

Keywords: stratified 3-dimensional flow, boundary layer, non-homogeneous fluid, internal waves, explicit solution, gravitational flow