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Existence and uniqueness for a Boussinesq system with a disordered forcing. (English)

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Summary: We study the existence, uniqueness, regularity and continuous dependence on initial data of solutions for Cauchy problem associated with the coupled system of Boussinesq type equations forced by highly oscillatory smooth coefficients. The model describes two-way propagation of long water waves with small amplitude on the surface of a one-dimensional channel with rough bottom (disordered topography). The dependent variables in this model are the wave elevation η and the potential velocity u measured at the fixed depth $Z_0 = \sqrt{2/3}$.

MSC:

76B15 Water waves, gravity waves; dispersion and scattering, nonlinear interaction

76B03 Existence, uniqueness, and regularity theory for incompressible inviscid fluids

35Q35 PDEs in connection with fluid mechanics

Keywords:

Cauchy problem; long water waves; rough bottom

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