

Nonlinear Partial Differential Equations

Boundary value problems and equations arising in fluid mechanics

Internal gravity-capillary solitary waves in finite depth

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Internal waves are waves which propagate along the interface of two fluids of different density. In this talk I will present some new results regarding existence of internal solitary waves under the influence of gravity and surface tension. The main idea is to use a spatial dynamics approach and formulate the steady Euler equations as an evolution equation. This equation is then studied by using the center manifold theorem. These techniques have previously been applied successfully to the surface wave case.