Modulational Instability and Stationary Waves for the Coupled Generalized Schrödinger-Boussinesq System

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The coupled generalized Schrödinger-Boussinesq (SB) system, which can describe a high-frequency mode coupled to a low-frequency wave in dispersive media is investigated. First, we study the modulational instability (MI) of the SB system. As a result, the general dispersion relation between the frequency and the wave number of the modulating perturbations is derived, and thus a number of possible MI regions are identified. Then two classes of exact travelling wave solutions are obtained expressed in the general forms. Several explicit examples are presented.

Key words: The Nonlinear Schrödinger-Boussinesq Equation; Modulational Instability; Solitary Waves.