Semiclassical limit of coupled nonlinear Schrödinger equations

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Abstract

This paper is devoted to the semiclassical limit of the coupled nonlinear Schrödinger equations. It emerges from the study of the important phenomenon occurring in condensed matter physics, like, for instance, the propagation of light pulse in an optical fiber, propagation in a nonlinear birefringent medium, or in the study of multi-spices and spinor Bose-Einstein condensation. It also arises in Rossby waves in a barotropic model of the atmosphere and ocean and in the problem of nonlinear dynamics of a $2d$ complex vector fields where the order parameter is the electric field of a polarized wave in the plane normal to the direction of propagation.