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Cauchy problem for multidimensional coupled system of nonlinear Schrödinger equation and generalized IMBq equation

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Abstract: The existence, uniqueness and regularity of the generalized local solution and the classical local solution to the periodic boundary value problem and Cauchy problem for the multidimensional coupled system of a nonlinear complex Schrödinger equation and a generalized IMBq equation

$$i\varepsilon_t + \nabla^2\varepsilon - u\varepsilon = 0,$$

$$u_{tt} - \nabla^2 u - a\nabla^2 u_{tt} = \nabla^2 f(u) + \nabla^2(|\varepsilon|^2)$$

are proved.

Keywords: coupled system of nonlinear Schrödinger equation and generalized IMBq, multidimensional, periodic boundary value problem, Cauchy problem, generalized local solution, classical local solution
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