Global well-posedness for the fourth-order Schrödinger equation with Hartree-type nonlinearity for Cauchy data in L^p

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Abstract

This paper is concerned with the Cauchy problem for the nonlinear fourth-order Schrödinger equation on R^{n}, with the nonlinearity of Hartree-type (| ·|^{-γ}*|u|^{2})u .It is shown that a global solution exists for initial data in the spaces L^{p} (p < 2) under somesuitable conditions on γ, n and p. The solution is established by using a data-decomposition argument, two kinds of generalized Strichartz estimates and a interpolation theorem.

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