

Year: 2019

Vol.: 95

Fasc.: 1-2

Title: Remarks on nonlinear Schrödinger equations with the harmonic potential

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We show that the small solution for a type of nonlinear Schrödinger equation with the harmonic potential exists over a longer time interval than the one given by local existence theory. We also get a control of the Sobolev norm of the solution on that time interval. We exploit the structure of nonlinearity to estimate the small divisor and perform a normal form process.

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