



Mathematics > Analysis of PDEs

Continuous dependence for H^2 critical nonlinear Schrödinger equations in high dimensions

[Wei Dai](#)

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The global existence of solutions in H^2 is well known for H^2 critical nonlinear Schrödinger equations with small initial data in high dimensions $d \geq 8$. However, even though the solution is constructed by a fixed-point technique, continuous dependence in H^2 does not follow from the contraction mapping argument. Comparing with the low dimension cases $4 < d < 8$, there is an obstruction to this approach because of the sub-quadratic nature of the nonlinearity (which makes the derivative of the nonlinearity non-Lipschitz). In this paper, we resolve this difficulty by applying exotic Strichartz spaces of lower order instead and show that the solution depends continuously on the initial value in the sense that the local flow is continuous $H^2 \rightarrow H^2$.

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