

Wellposedness of the cubic Gross-Pitaevskii equation with spatial white noise on \mathbb{R}^2

mercredi 15 mai 2024 17:00 (30 minutes)

In this talk, we prove the global well-posedness of the Gross-Pitaevskii equation with white noise potential, i.e. a cubic nonlinear Schrödinger equation with harmonic confining potential and spatial white noise multiplicative term. This problem is ill-defined and a Wick renormalization is needed in order to give a meaning to solutions. In order to do this, we introduce a change of variables which transforms the original equation into one with less irregular terms. We construct a solution as a limit of solutions of the same equation but with a regularized noise. This convergence is shown by interpolating between a diverging bound in a high regularity Hermite-Sobolev space and a Cauchy estimate in $L^2(\mathbb{R}^2)$.

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