Cauchy problems for magnetic nonlinear Schrödinger equations

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Abstract

This is a joint work with Hichem Hajaiej (NYU Shanghai), Slim Ibrahim (University of Victoria (BC)), and Laurent Michel (Université de Nice-Sophia Antipolis). We consider the well-posedness issue for nonlinear Schrödinger equations with non autonomous magnetic potentials. We show, without any gauge assumption, the well-posedness in the domain of the operator for L^2-subcritical nonlinearities. In the critical case, the blow-up threshold is the non-magnetic one.

In the supercritical cases, for homogeneous fields, we also obtain blow-up and global well-posedness criterion, which relies both on the energy and angular momentum.

We will show some results for nonlinear Schrödinger with non-autonomous external (electric) potentials.

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