

New geometric condition for the observability of the Schrödinger equations with magnetic potential on two-dimensional torus.

mardi 1 juillet 2025 09:45 (45 minutes)

In this talk, we consider the observability problem for the Schrödinger equation on the two-dimensional torus, subject to a first-order perturbation by a magnetic potential. This situation turns out to be dramatically different from the case of the Schrödinger equation with a purely electric potential. More precisely, there is a sufficient and almost necessary geometric control condition for the electromagnetic Schrödinger equation that goes beyond the classical geometric control condition established by Lebeau for the Schrödinger equation. Under this new geometric condition, the high-frequency observability result holds on the semiclassical timescale $O(\hbar^{-3/2})$, much shorter than the $O(\hbar^{-2})$ timescale required for the purely electric Schrödinger operator observed from any nonempty measurable set. This talk is based on joint work with Kévin Le Balch and Jingrui Niu.

Author: SUN, Chenmin (Créteil, France)

Orateur: SUN, Chenmin (Créteil, France)