Schrödinger’s equation with a potential in rough motion

Marius Beceanu, Rutgers University
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Abstract

We prove endpoint Strichartz estimates for the linear Schroedinger equation in $\mathbb{R}^3$, with a time-dependent potential that keeps a constant profile and is subject to a rough motion, which need not be differentiable and may be large in norm. The potential is also subjected to a time-dependent rescaling, with a non-differentiable dilation parameter. We use the Strichartz estimates to prove the non-dispersion of bound states, when the path is small in norm, as well as boundedness of energy. We also include a sample nonlinear application of the linear results. This is joint work with Avy Soffer.