DYNAMICAL UNCERTAINTY PRINCIPLE ON THE HEISENBERG GROUP

SOMNATH GHOSH

Abstract:

The Uncertainty Principle for a function f and its Fourier transform $\hat{f}$ is a central phenomena in Euclidean harmonic analysis. Consider the Schrödinger equation on $\mathbb{R}^n$:

$$i\partial_t u(x,t) + \Delta_x u(x,t) = 0, \quad u(x,0) = u_0(x).$$

Then any Uncertainty Principle for the pair $(f, \widehat{f})$ can be restated in terms of an Uncertainty Principle for (u_0, u_1), known as a Dynamical Uncertainty Principle, where $u_1(x) = u(x,1)$.

In this talk, we will deal with the Schrödinger equation associated to the sub-Laplacian on the Heisenberg group. Besides considering certain Uncertainty Principle for solutions of the free Schrödinger equation on the Heisenberg group, we will see the influence of the potential. Further, we will discuss some limitations to Dynamical Uncertainty Principles. (Joint work with Prof. Philippe Jaming).