THE SCHRÖDINGER EQUATION FOR THE FRACTIONAL LAPLACIAN IN NEGATIVE CURVATURE

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Let $0<\alpha<2$ with $\alpha\neq 1$. The Schrödinger equation

$$\begin{cases} i\,\partial_t u(t,x) + (-\Delta)_x^{\alpha/2} u(t,x) = F(t,x) \\ u(0,x) = f(x) \end{cases}$$

associated with the fractional Laplacian $(-\Delta)^{\alpha/2}$ has attracted attention during recent years, mostly in the Euclidean setting. In this talk, we consider two model cases in negative curvature : hyperbolic spaces and homogeneous trees. As for the classical Schrödinger equation in the limit case $\alpha=2$, the large time decay is $|t|^{-3/2}$ and one gets better estimates (dispersive or Strichartz) than in the Euclidean case. This is joint work with Yannick Sire (Johns Hopkins University).