

The Schrödinger equation on a tree: dispersion and Hardy's uncertainty principle

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In this talk we consider the Schrödinger equation on a tree with the last generation formed by infinite edges. More precisely we have an equation on each edge and coupling conditions at the vertices. We study the dispersion property of the linear semigroup and analyze the well-posedness of the nonlinear Schrödinger equation in L^2 as well as in the energy space. We also prove that any solution of the linear problem satisfying for some $\alpha\beta > 1/4$

$$|u(0, x)| \lesssim e^{-\alpha x^2}, \quad |u(1, x)| \lesssim e^{-\beta x^2}, \quad \forall x \in \Gamma,$$

vanishes identically.

Joint work with Andreea Grecu (UB-IMAR) and Aingeru Fernandez (University of Basque Country).