THE UNIVERSITY
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at CHAPEL HILL

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Phillips Hall 332
2:00–3:00 PM

Some unique continuation results for Schrödinger equations

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Abstract. This talk focuses on a fundamental concept in the field of partial differential equations — unique continuation principles. Such a principle describes the propagation of the zeros of solutions to PDEs. Specifically, it answers the question: what condition is required to guarantee that if a solution to a PDE vanishes on a certain subset of the spatial domain, then it must also vanish on a larger subset of the domain. Motivated by Hardy's uncertainty principle, Escauriaza, Kenig, Ponce, and Vega were able to show in a series of papers that if a linear Schrödinger solution decays sufficiently fast at two different times, the solution must be trivial. In this talk, we will discuss unique continuation properties of solutions to higher-order Schrödinger equations and variable-coefficient Schrödinger equations, and extend the classical Escauriaza-Kenig-Ponce-Vega type of result to these models. This is based on joint works with S. Federico, Z. Li, and Z. Lee.