

Quantitative unique continuation theorems

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Abstract

We will discuss three quantitative unique continuation theorems at infinity. The first theorem, for second order elliptic equations, is joint work with Bourgain and was a key step in our proof of Anderson localization for the continuous Bernoulli model in higher dimensions, a problem posed by Anderson (1958). The second theorem, for second order parabolic equations, settles a conjecture of Landis-Oleinik (1974) and extends results of Escauriaza-Seregin-Sverak (2002) which have had applications to the regularity of solutions to the Navier-Stokes equations. This is joint work with Escauriaza, Ponce and Vega. The third theorem, also joint work with the same authors, deals with dispersive equations and can be thought of as an extension to non-linear Schrödinger equations of Hardy's uncertainty principle.