

1064-35-286

Mihaela Ignatova* (ignatova@usc.edu) and **Igor Kukavica** (kukavica@usc.edu). *Strong Unique Continuation Problem and Complexity of Solutions to Higher Order Elliptic and Parabolic Partial Differential Equations with Gevrey Coefficients.*

We study the strong unique continuation properties for 1D higher order parabolic partial differential equations with coefficients in the Gevrey class G^σ for $\sigma > 1$. We establish a quantitative estimate of unique continuation (observability estimate) under a very mild assumption on the Gevrey exponents σ ; that is, $1 \leq \sigma \leq 1 + \eta$, where η is a universal constant. As an application, we give a new upper bound on the number of zeros for the solutions with a polynomial dependence on the coefficients. We also address the strong unique continuation problem for elliptic and parabolic partial differential equations in higher dimensions. In particular, we cover the case of the Navier-Stokes equation with non-analytic Gevrey forcing. (Received September 13, 2010)