Mathematics, Statistics, and Computer Science **@ UIC**

Analysis and Applied Mathematics Seminar

A local-in-time Harnack inequality and applications to reaction-diffusion equations

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Abstract: The Harnack inequality requires one to look back in time to relate the supremum and infimum of a solution to a parabolic equation. In this talk, I will introduce a Harnack-type inequality that allows us to remove this looking-back-in-time restriction at the expense of a slightly weaker bound. I will then discuss applications of this bound to three non-local reaction-diffusion equations arising in biology and combustion. In particular, in each case, this inequality allows us to show that solutions to these equations, which do not enjoy a maximum principle, may be compared with solutions to a related local equation, which does enjoy a maximum principle. Precise estimates of the propagation speed follow from this.

Monday, December 4 at 4:00 PM in SEO 636