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

Analysis and Applied Mathematics Seminar

On Regularity Properties for Fluid Equations

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Abstract: Fundamental mathematical questions about the 3D Navier-Stokes remain unanswered, such as the question of the regularity of solutions to the equations. Thus it is natural to ask: If we assume a smooth solution to the 3D Navier-Stokes equations u loses regularity at time T^*, what is the rate of blow-up? In this talk, we discuss blow-up rates of solutions in the homogeneous Sobolev spaces, in particular the new result in $\dot{H}^{\frac{3}{2}}$. We will also discuss a newly developed regularity criterion for the 3D Boussinesq equations, which only imposes a condition on the low modes of the velocity u. The key tool in the development of this weaker regularity criterion is linked to the dissipation wave number.

Monday, November 23 at 4:00 PM in SEO 636