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

Departmental Colloquium

Heat Rises: 100 Years of Rayleigh-Bénard Convection

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Abstract: Buoyancy forces result from density variations, often due to temperature variations, in the presence of gravity. Buoyancy-driven fluid flows shape the weather, ocean and atmosphere dynamics, the climate, and the structure of the earth and stars. In 1916 Lord Rayleigh published a paper entitled ''On Convection Currents in a Horizontal Layer of Fluid, when the Higher Temperature is on the Under Side'' introducing the minimal mathematical model of buoyancy-driven fluid flow now known as Rayleigh-Bénard convection. For a century this model has served as a primary paradigm of complex nonlinear dynamics displaying spontaneous symmetry breaking and pattern formation, chaos and turbulence. Here we describe progress and challenges for the analysis of Rayleigh's model in the strongly nonlinear regime of turbulent convection.

Tea and light refreshments after the talk in SEO 300.

Friday, September 16 at 3:00 PM in SEO 636