Mathematics & Statistics Colloquium

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Computer-Assisted Proofs in Applied Mathematics

One of the core elements of applied mathematics is mathematical modeling, consisting of nonlinear equations, such as maps, and ordinary differential equations, and partial differential equations. Such models are widely used to describe complex phenomena in biology, physics, chemistry, meteorology, epidemiology, medicine, and many other fields. A fundamental difficulty arising in studying nonlinear models is that most cannot be solved in closed form.

This talk will detail how computer-assisted proofs (CAPs) can solve such nonlinear problems. CAPs are at the forefront of modern mathematics, and have led to many important recent mathematical advances. They provide a way of melding analytical techniques with numerical methods, in order to provide rigorous statements for mathematical models that could not be treated by either method alone.

Tuesday, Sept. 30

4:15pm Refreshments, 4:30pm Talk
Science Center 199 (Cuniff Hall)