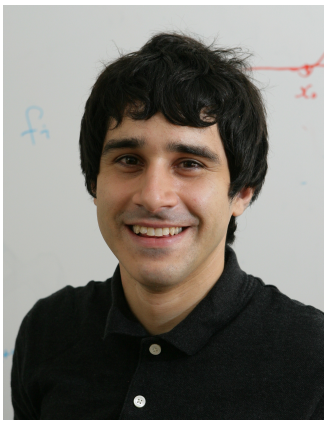
Department of Mathematics and Statistics

Special Colloquium



Math and the Movies: Modern Scientific Computing Applications

Joseph Teran

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Joseph Teran is a Professor of Applied Mathematics at UC Davis and former faculty at UCLA, where he advised over twenty Ph.D. students. Teran graduated with a Ph.D. in mathematics in 2005 from Stanford University. Among other awards, Discover Magazine named him in 2008 one of the 50 "Best Brains in Science."

Abstract: New applications of scientific computing for solid and fluid mechanics problems include simulation of virtual materials in movie visual effects and related fields. Surprisingly, visual realism for these applications requires physically accurate dynamics, particularly for materials like water, smoke, fire, and soft solids. New algorithms are required to achieve this. Professor Teran will speak about the simulation techniques required in these fields and will share some recent results, including real-time simulation, extreme deformation of elastic objects with contact, high-resolution incompressible flow, and clothing and hair dynamics. He will also discuss new algorithms used for simulating the dynamics of snow and water in Disney's animated feature films "Frozen" and "Moana". The lecture will be accessible to students and suitable to a diverse interdisciplinary audience.

Keywords: Solid and fluid mechanics, simulation techniques, movie visual effects, and Disney's animated feature films "Frozen" and "Moana".

Friday, May 5, 12:00 – 1:20 pm in 3-1616