



Institute for Mathematics and its Applications

IMA public lecture series
MATH MATTERS

Math Behind the Curtains

Dynamic Simulation at Pixar Animation Studios

David Baraff

Senior Animation Scientist
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Amundson Hall B75
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Minneapolis



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Pixar Animation Studios, the creators of *Monsters, Inc.*, *Finding Nemo*, and *The Incredibles*, has relied heavily on a sophisticated mathematical technique called dynamic simulation to shape the final look and behavior of the movies' main characters. From the beginning, however, it has been set in stone that the use of dynamic simulation could not interfere in Pixar's traditional creative process. Senior animation scientist, David Baraff, gives a candid behind-the-scenes look at the core physical simulation technologies employed in Pixar's recent movies, describes the balancing of creative and technical needs due to simulation, and reveals the difficult effects that were easy, and the simple shots that were hard.