

### Biomedical Computation Review

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318 Campus Drive

Clark Center Room S231

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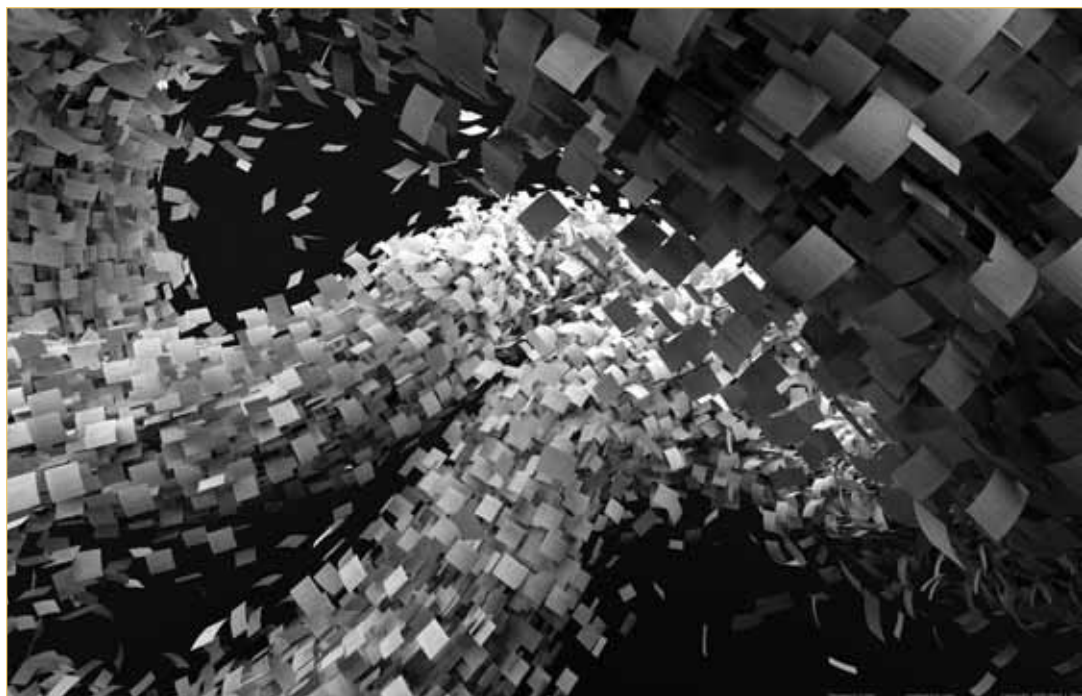
# seeing science

## SeeingScience

BY KATHARINE MILLER

### Fluid Code

In 1999, Mark J. Stock, PhD, took his first accidental step toward becoming an artist. He used a 3-D rendering program to help him debug some code. “The first image that came out was beautiful,” he says. “There were images within the data that shouldn’t really be there.” Just as people find shapes in clouds, Stock says, the computer serendipitously creates things we recognize, but with more possibilities. After eight years of creating art with his computational tools, Stock says he has come to understand the medium the way a painter understands paint. “Code is the farthest thing from a picture,” he says. “But I now have a much better idea of what the image will look like when I write the code.” □



*For his PhD dissertation in aerospace engineering at the University of Michigan, Stock used vortex particle methods to simulate flow. “The particles move around and carry properties with them,” he says. But most particles in such simulations are like billiard balls bouncing off of one another. Stock’s particles, on the other hand, interact in a more complicated way, giving them directionality and curvature. This accomplishment required a lot of work and produced 600 pages of code. Here, Stock displays each revision of those 600 pages of code, using the code itself to simulate the movement of those pages in space. “I wanted to show that there’s a tremendous amount of energy that goes into making sure the simulation solves the physical equations of motion—and that this energy can turn one type of data into a picture.” Courtesy of Mark J. Stock, [www.markjstock.com](http://www.markjstock.com).*