

Evolution of 2D-circular shear layers.

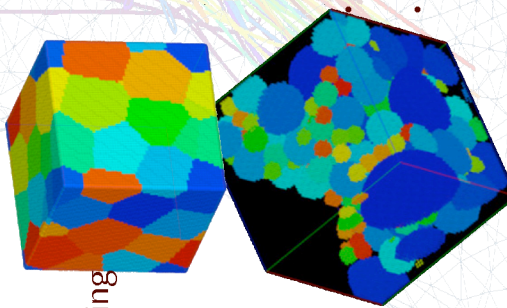
Forced and decaying turbulence

- I. Studies of forced and decaying 2d flows
- I. in a disk.

Little caption for jet

charter, what we do & why

Chaotic advection in a low Reynolds number micromixer is created by aperiodic pulsatile flow. Simulation is used to examine the characteristics of the flow in the mixing region. The calculation of particle trajectories for large numbers of tracer particles, necessary to obtain statistically meaningful results, requires parallel computation. (Project: Drug Discovery, microfluidics and High Throughput Flow Cytometry, funded by NIH)

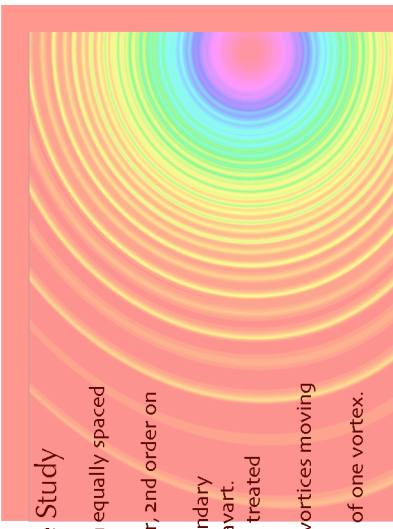


Modeling of Granular Materials

- MPM provides capability for large deformation, many contact surface calculations.
- Predictive capability in development (eg. sensitivity to friction coefficient, grain sizes, shapes, and material properties).

Vortex Dipole Study

- Finite differences on an equally spaced grid.
- 4th order in the interior, 2nd order on the boundary.
- Streamfunction on boundary computed using Biot-Savart.
- Outflow and inflow are treated separately.
- Simulation of a pair of vortices moving downstream, no walls.
- Closeup shows the core of one vortex.



Materials Science

- Sulsky, Ingber, Mammoli
- Heat and Fluid Flow
- Ingber, Mammoli, Coutsiaris, Nitsche, Warburton
- EECE
- blah blah
- Electromagnetics and Plasmas
- Ellison, Warburton, Hagstrom

- I. Heavy gas on top, light gas at bottom.
- II. Gravity acts downwards
- III. Atwood # =
- IV. Three mode perturbation of interface
- V. Finite mesh with 6400 elements.
- VI. $p=10$ approximation
- VII. 1.7 million degrees of freedom total
- VIII. Exponential filter used to maintain stability.



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