

Abstract Submitted  
for the DFD08 Meeting of  
The American Physical Society

**Azimuthal Instability of a Vortex Ring Computed by a Vortex Sheet Panel Method**<sup>1</sup> ROBERT KRASNY, University of Michigan, HUALONG FENG, China Ocean University, LEON KAGANOVSKIY, New College of Florida — A Lagrangian panel method is presented for vortex sheet motion in 3D flow. The sheet is represented by a set of quadrilateral panels with a quadtree structure. The panels have active particles carrying circulation and passive particles used for adaptive panel subdivision. The Biot-Savart kernel is regularized and the particle velocity is computed using a treecode. The method is applied to study the azimuthal instability of a vortex ring. Results are presented showing the following sequence of events: wavy deformation of the ring axis, first collapse of the core, appearance of secondary structures wrapped around the core, second collapse of the core out of phase with first collapse, and radial ejection of ringlets. These events are accompanied by local axial flow in the core.

<sup>1</sup>Supported by NSF.

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Date submitted: 03 Aug 2008

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