1046-65-73 **Leon Kaganovskiy*** (lkaganovskiy@ncf.edu), 3525 Cheshire Sq, apt B, Sarasota, FL 34237, and **Robert Krasny** (krasny@umich.edu) and **Feng Hualong** (hualongf@umich.edu). *Adaptive Quad-tree Surface Representation for 3-D Vortex Rings Motion and Collision.*

A panel method is presented for computing vortex sheet motion in 3D flow. The sheet is represented as a set of quadrilateral panels with a quad-tree structure. The panels have active particles that carry circulation and passive particles used for adaptive panel subdivision. The quadrature scheme does not require explicit derivatives of the flow map. The Biot-Savart kernel is regularized and the velocity is evaluated by a multipole treecode. The method is applied to compute the azimuthal instability of a vortex ring. Vorticity isosurfaces are investigated. Results are presented showing the deformation of the ring axis and the presence of local axial flow in the core of the ring as seen in experiments. We also found evidence that the local axial flow reverses direction similar to Naitoh experiments. (Received July 21, 2008)