Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

Slowing of Vortex Rings RUSSELL DONNELLY, DIOGO BOLSTER, ROBERT HERSHBERGER, University of Oregon — We have investigated the slowing of vortex rings in water which are created with very thin cores. We find that these rings propagate with no measurable change in diameter or core size. The drag appears to be the result of viscous forces on the core. A simple model for this drag describes experimental data in terms of a drag coefficient, which depends only on Reynolds number. Barenghi's group at Newcastle found that the translational velocity of a ring in an *inviscid* fluid perturbed by Kelvin waves decreases with increasing amplitude of Kelvin waves. This suggests that the velocity of vortex rings in a viscous fluid may well depend on the amplitude of Kelvin waves at the time of formation. Rings with substantial amplitude of Kelvin waves will be expected to move more slowly than rings with little or no Kelvin wave amplitude. We present experimental data confirming this suggestion.

Russell Donnelly
University of Oregon

Date submitted: 18 Jul 2008 Electronic form version 1.4