

Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

A Multi-moment vortex method for 2D viscous fluids DAVID UMINSKY, Mathematics, UCLA, C. EUGENE WAYNE, Mathematics, Boston University, ALETHEA BARBARO, Mathematics, UCLA, VITALII OSTROVSKYI, Mathematics, USC — In this talk we introduce a new vortex method which incorporates Hermite moment corrections to radially symmetric Gaussian basis functions. Convergence of the Hermite expansion is proven and the added Hermite moments allow for each particle to deform under convection. We analyze the case of a single particle with many Hermite moments in the context of a shear diffusion example and discuss the improved spatial accuracy of the method. Time permitting, we will provide some examples of a large number of particles with fewer Hermite moments and discuss the trade off between computational efficiency and spatial accuracy.

David Uminsky
Mathematics, UCLA

Date submitted: 06 Aug 2010

Electronic form version 1.4