Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

On Intense Vortex Structures in Isotropic Turbulence ANTHONY LEONARD, California Institute of Technology — We continue our study of vortex structures are having vorticity occupying the high amplitude tail of the distribution of vorticity amplitudes in homogeneous, isotropic turbulence. The data are obtained from the results of a 1024^3 DNS at $Re_\lambda = 433$ residing in the Johns Hopkins web-based public database (http/turbulence.pha.jhu.edu). First, a connection is made between the PDF of a single intense structure and the vorticity distribution within that structure. Second, this PDF for intense structures, coupled with the distribution of finite-time Lyapunov exponents for material deformation in isotropic turbulence, yields a candidate for the full PDF of vorticity amplitudes.

Anthony Leonard
California Institute of Technology

Date submitted: 02 Aug 2013 Electronic form version 1.4