Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Turbulant heating in superfluid He^4 K.J. THOMPSON, University of Florida, S.C. LIU, G. LABBE, G.G. IHAS, University of Florida — Turbulence leads to heating in classical fluids, via viscus damping. Current theories predict the time-dependent evolution of heat due to decaying turbulence in a pure (inviscid) superfluid (^{4}He near absolute zero). Measurement of such a rise in temperature as a function of time will provide insight into the energy dissipated by the fluid and the time scales involved in the decay process. We have detected a rise in helium temperature as a resulting from a sudden motion of a stainless steel grid out of a column of superfluid He^4. The temperature rise was measured by a 300 μm Ge thermometer submersed in the fluid. We have compared our measurements to an identical system without the stainless steel grid. The heating patterns due to the grid motion is measured, examined and discussed, with data presented for the total energy dissipated in the fluid as well as the energy rise in the fluid as a function of time. The heat from turbulent decay is evident. This work was supported by the Research Corporation and the US National Science Foundation grant # DMR-0602778.

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Date submitted: 07 Dec 2009 Electronic form version 1.4