Rate of Entropy Extraction in Compressible Turbulence\textsuperscript{1} MAHESH BANDI, Department of Physics and Astronomy, University of Pittsburgh — The rate of change of entropy is measured for a system of particles floating on the surface of a fluid maintained in a turbulent steady state. This rate of entropy $\dot{S}$ equals the time integral of the two point temporal velocity divergence correlation function with a negative prefactor. The measurements satisfactorily agree with the sum of Lyapunov exponents (Kolmogorov-Sinai entropy rate) measured from previous simulations, as expected of dynamical systems that are very chaotic (Sinai-Ruelle-Bowen statistics).

\textsuperscript{1}This work is supported by the NSF (Grant No. DMR-0201805).

Mahesh Bandi

Date submitted: 23 Dec 2005

Electronic form version 1.4