

Abstract Submitted  
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**Information Content of Turbulence** RORY CERBUS, WALTER GOLDBURG, Department of Physics and Astronomy, University of Pittsburgh — This work is one of the few attempts to treat turbulence as an information source that can be controlled experimentally. As the Reynolds number  $Re$  is increased, more degrees of freedom are excited and participate in the turbulent cascade. One might therefore expect that on raising  $Re$ , the system becomes more random, thereby increasing the Shannon entropy  $H$ . However, because the excited modes are correlated,  $H$  is a *decreasing* function of  $Re$ , as is experimentally shown in a study of turbulence in a flowing soap film. A parallel analysis was made of the logistic map, where  $H$  is calculated as a function of the control parameter  $r$  in the equation  $x_{n+1} = rx_n(1 - x_n)$ . There, as expected,  $H$  is an increasing function of  $r$ . This work is supported by NSF grant No. 1044105, a Mellon fellowship, and the Okinawa Institute of Science and Technology.

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