

Abstract Submitted  
for the DFD11 Meeting of  
The American Physical Society

**Development and testing of a user-friendly Matlab interface for the JHU turbulence database system**<sup>1</sup> JASON GRAHAM, Mechanical Engineering and CEAFM, The Johns Hopkins University, EDO FREDERIX, Permanent address: Mechanical Engineering, Eindhoven University of Technology, The Netherlands, CHARLES MENEVEAU, JHU — One of the challenges that faces researchers today is the ability to store large scale data sets in a way that promotes easy access to the data and sharing among the research community. A public turbulence database cluster has been constructed in which 27 terabytes of a direct numerical simulation of isotropic turbulence is stored (Li et al., 2008, JoT). The public database provides researchers the ability to retrieve subsets of the spatiotemporal data remotely from a client machine anywhere over the internet. In addition to C and Fortran client interfaces, we now present a new Matlab interface based on Matlab's intrinsic SOAP functions. The Matlab interface provides the benefit of a high-level programming language with a plethora of intrinsic functions and toolboxes. In this talk, we will discuss several aspects of the Matlab interface including its development, optimization, usage, and application to the isotropic turbulence data. We will demonstrate several examples (visualizations, statistical analysis, etc) which illustrate the tool.

<sup>1</sup>Supported by NSF (CDI-II, CMMI-0941530) and Eindhoven University of Technology's Masters internship program.

Charles Meneveau  
Mechanical Engineering and CEAFM, The Johns Hopkins University

Date submitted: 04 Aug 2011

Electronic form version 1.4