

Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

Dissipation scales in Navier-Stokes turbulence using highly resolved Direct Numerical Simulations (DNS) SUALEH KHURSHID, DIEGO DONZIS, Texas A&M University, KATEPALLI SREENIVASAN, New York University — Recent work has shown that turbulent dissipation acquires strong fluctuations and other properties that maintain, even at low enough Reynolds numbers (Re), the same relationship with the inertial range, as if Re is very high. In this work we further investigate these conclusions by using highly resolved DNS at a range of Re . We highlight the difficulties associated with investigating sub-Kolmogorov scales accurately from numerical as well as statistical standpoints. Results on the time evolution of dissipative modes are presented. The connection of this observation to large-scale and inertial-range dynamics is presented, pointing to potential shortcomings in determining coefficients of the presumed exponential roll off of energy spectrum. Further consequences of these findings are discussed.

Sualeh Khurshid
Texas A&M University

Date submitted: 01 Aug 2017

Electronic form version 1.4