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Quantum Fluid Mechanical Theory of Turbulence DAVID DROSDOFF, ALLAN WIDOM, Northeastern University, YOGENDRA SRIVASTAVA, Northeastern University, INFN, University of Perugia — Turbulence has been called the last great unsolved problem of classical physics. The difficulty of solving the turbulence problem classically (even with the help of recent large scale computer simulations) may be that the problem is not classical. Turbulence will here be described as due to the non-commuting nature of the components of the Landau quantum fluid velocity field. The formation of fractal dimensional regions of quantum vortex strings in fully developed turbulence will be discussed along with the implied Kolmogorov scaling functions.

David Drosdoff
Northeastern University

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