

1064-35-327

**Radu Dascaliuc\*** (rd5bw@virginia.edu), Department of Mathematics, University of Virginia, Charlottesville, VA 22904, and **Zoran Grujic**. *On energy cascade and flux locality in physical scales of the 3D Navier-Stokes Equations.*

Rigorous estimates for the total flux in  $\mathbb{R}^3$  are obtained in the framework of suitable solutions of the 3D Navier-Stokes equations. The bounds are used to establish a condition, involving Taylor length scale and the size of the domain, sufficient for existence of the inertial range and the energy cascade in decaying turbulence (zero driving force, non-increasing global energy). Several manifestations of the locality of the flux under this condition are obtained. All the scales involved are actual physical scale and no regularity or homogeneity/scaling assumptions are made. (Received September 13, 2010)