Meeting: 1000, Albuquerque, New Mexico, SS 9A, Special Session on Mathematical Methods in Turbulence

1000-76-205 **Susan Kurien*** (`skurien@lanl.gov`), Mail stop B284, Los Alamos National Laboratory, Los Alamos, NM 87545, and **Mark Taylor** and **Takeshi Matsumoto**. *Cascade time-scales for energy and helicity in isotropic homogeneous turbulence.*

Energy and helicity are the two conserved quantities in the inviscid Navier-Stokes equations. Energy has been thought to dominate the dynamics in the inertial range of scales with helicity being carried along more or less passively. We show that an estimate of the type Kraichnan (1971) performed for the time-scale of energy transfer in wavenumber space can be carried out for helicity transfer as well. This new scenario of two competing timescales implies a richer structure for turbulence dynamics in which helicity can play a significant role. We discuss the implications for the form of the energy and helicity spectra and present numerical simulations data which support the predictions. (Received August 24, 2004)