

## The Inverse Cascade of Magnetic Helicity

Wolf-Christian Müller

Max-Planck-Institut für Plasmaphysik

The inverse cascade of magnetic helicity in three-dimensional magnetohydrodynamic turbulence is studied by means of high-resolution direct numerical simulations (DNS) of decaying and small-scale-driven turbulent flows. In the decaying case observed self-similar inertial-range behavior of the magnetic helicity spectrum is significantly different from the results of earlier two-dimensional studies based on statistical closure models. The findings are explained by a model based on the statistical eddy-damped quasi-normal Markovian closure theory (EDQNM). It is shown that the inverse cascade of magnetic helicity is governed by the chirality of the turbulent velocity field.

Wednesday, December 3, 2008  
Center Green Laboratory 1, Room 2503  
Lecture 10:30am  
(Refreshments served at 10:15am)