School of Mathematics

Course 343 — Introduction to Kolmogorov's Theory of Turbulence 2002-03 (SS Theoretical Physics, M.Sc. Students)

Lecturer: Professor Siddhartha Sen

Requirements/prerequisites:

Duration: 1 term

Number of lectures per week: 2

Assessment:

End-of-year Examination: One 1.5 hour examination at end of course.

Description:

Features of turbulent flows, general energy and balance results, derived from the Navier Stokes equations. Inertial range and dissipative range. Stochastic ideas and their use to derive a scale by scale energy balance equation and to justify a cascade picture of energy flow. Kolmogorov's scaling law, other scaling laresults and their implications. Validity of Kolmogorov's result on very general grounds.

April 10, 2003