

LECTURES

ON ANDERSON LOCALISATION

Provisional Announcement - Syllabus

- **30 April**
Lecture 1. Introduction
Qualitative discussion: Quantum Mechanics of a single particle in a random potential; Spectrum, Density of states, wave functions, Rate of Tunnelling, Diffusion and Localisation, Hopping Conductivity. Level Statistics. Integer Quantum Hall Effect.
Elements of Theoretical Technology (very qualitatively): To average or not to average. Green's Functions, Conductivity.
- **2 May**
Lecture 2.
Band Tail. Density of states at negative energies
- **7 May**
Lecture 3.
Supersymmetric Non-linear σ -Model. Level Statistics
- **9 May**
Lecture 4.
Weak Localisation. Quantum Correction to Conductivity. Effect of Magnetic Field, Magnetic Impurities and Spin-Orbit Interaction.
- **13 May**
Lecture 5.
Scaling Theory for Localisation "Gang of Four" (E. Abrahams, P.W. Anderson, D.C. Liccardello and T.V. Ramakrishnan) Theory
- **15 May**
Lecture 6.
Pre-Localisation

- **21 May**
Lecture 7.
Integer Quantum Hall Effect
- **23 May**
Lecture 8.
Rate of Phase Breaking due to Electron-Electron Collisions