

# NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Physics - NOC:Neutron Scattering for Condensed Matter Studies

Subject Co-ordinator - Prof. Saibal Basu

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Neutrons as Probe of Condensed Matter

Lecture 2 - Sources for thermal neutrons used in neutron scattering

Lecture 3

Lecture 4 - Calculating Neutron Scattering cross-section

Lecture 5

Lecture 6 - Scattering theory and introducing dynamics in the formalism

Lecture 7 - Scattering theory and introducing dynamics in the formalism

Lecture 8 - Scattering theory and introducing dynamics in the formalism

Lecture 9 - Scattering law's correlation with double-Fourier transform of real space correlation function

Lecture 10 - Scattering law's correlation with double-Fourier transform of real space correlation function

Lecture 11 - Correlation function to resolution and accessible( $Q, \tilde{A}$ ). Introducing experimental facilities

Lecture 12 - Correlation function to resolution and accessible( $Q, \tilde{A}$ ). Introducing experimental facilities

Lecture 13 - Correlation function to resolution and accessible( $Q, \tilde{A}$ ). Introducing experimental facilities

Lecture 14 - Correlation function to resolution and accessible( $Q, \tilde{A}$ ). Introducing experimental facilities

Lecture 15 - Introducing resolution and components of neutron scattering facilities.

Lecture 16 - Introducing resolution and components of neutron scattering facilities.

Lecture 17 - Continue with neutron scattering set up and its components like collimators, filters, detectors

Lecture 18 - Continue with neutron scattering set up and its components like collimators, filters, detectors

Lecture 19 - Describe the operation of various kinds of neutron detectors

Lecture 20 - Describe the operation of various kinds of neutron detectors

Lecture 21 - Introducing neutron choppers, velocity selectors and polarizers, some important components of be

Lecture 22 - Introducing neutron choppers, velocity selectors and polarizers, some important components of be

Lecture 23 - Neutron polarizers and spin-flippers

Lecture 24 - Neutron polarizers and spin-flippers

Lecture 25 - Diffraction at various length scales at a reactor and at a spallation neutron source

Lecture 26 - Diffraction at various length scales at a reactor and at a spallation neutron source

Lecture 27 - Application of neutron crystallography

Lecture 28 - Application of neutron crystallography

Lecture 29 - Magnetism in solids

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- Lecture 30 - Magnetism in solids
- Lecture 31 - Magnetic interaction in solids and magnetic neutron diffraction
- Lecture 32 - Magnetic interaction in solids and magnetic neutron diffraction
- Lecture 33 - Magnetic interaction in solids and magnetic neutron diffraction
- Lecture 34 - Magnetic neutron diffraction
- Lecture 35 - Magnetic neutron diffraction
- Lecture 36 - Neutron diffraction from liquid and amorphous systems
- Lecture 37 - Neutron diffraction from liquid and amorphous systems
- Lecture 38 - Small Angle Neutron Scattering (SANS) for mesoscopic structure
- Lecture 39 - Small Angle Neutron Scattering (SANS) for mesoscopic structure
- Lecture 40 - Small Angle Neutron Scattering (SANS) for mesoscopic structure
- Lecture 41 - Small Angle Neutron Scattering (SANS) for mesoscopic structure
- Lecture 42 - SANS for soft condensed matter
- Lecture 43 - SANS for soft condensed matter
- Lecture 44 - SANS for polymers, biological systems, nanoparticle aggregates, rocks, Superconducting vortex lattice
- Lecture 45 - SANS for polymers, biological systems, nanoparticle aggregates, rocks, Superconducting vortex lattice
- Lecture 46 - Neutron reflectometry for thin films
- Lecture 47 - Neutron reflectometry for thin films
- Lecture 48 - Neutron reflectometry for thin films
- Lecture 49 - Details formalism to evaluate specular neutron reflectivity and comparison with x-ray reflectometry
- Lecture 50 - Details formalism to evaluate specular neutron reflectivity and comparison with x-ray reflectometry
- Lecture 51 - Neutron reflectometry data analysis and reflectometers at various sources
- Lecture 52 - Neutron reflectometry data analysis and reflectometers at various sources
- Lecture 53 - Neutron reflectometry data analysis and reflectometers at various sources
- Lecture 54 - Examples of PNR with and without spin analysis and introduction to off-specular reflectometry
- Lecture 55 - Examples of PNR with and without spin analysis and introduction to off-specular reflectometry
- Lecture 56 - Examples of PNR with and without spin analysis and introduction to off-specular reflectometry
- Lecture 57 - Off-specular neutron reflectometry and introduction to inelastic neutron scattering
- Lecture 58 - Off-specular neutron reflectometry and introduction to inelastic neutron scattering
- Lecture 59 - Off-specular neutron reflectometry and introduction to inelastic neutron scattering
- Lecture 60 - Phonon measurements with neutrons
- Lecture 61 - Phonon measurements with neutrons
- Lecture 62 - Phonon measurements; single crystals
- Lecture 63
- Lecture 64 - Phonon: Density of States measurements
- Lecture 65 - Stochastic dynamics with neutrons
- Lecture 66 - Stochastic motion and various types of diffusion
- Lecture 67 - Stochastic motion and various types of diffusion
- Lecture 68 - Spin echo spectrometer, Summary of the course

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Lecture 69 - Spin echo spectrometer, Summary of the course