NPTEL Video Course - Physics - Relativistic Quantum Mechanics

Subject Co-ordinator - Prof. Apoorva D Patel

Co-ordinating Institute - IISc - Bangalore

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

Lecture 30 - Photons and the gauge symmetry
Lecture 31 - Abelian local gauge symmetry, The covariant derivative and invariants
Lecture 32 - Charge quantisation, Photon propagator, Current conservation and polarisations
Lecture 33 - Feynman rules for Quantum Electrodynamics, Nature of perturbative expansion
Lecture 34 - Dyson's analysis of the perturbation series, Singularities of the S-matrix, Elementary QED proce
Lecture 35 - The T-matrix, Coulomb scattering
Lecture 36 - Mott cross-section, Compton scattering
Lecture 37 - Klein-Nishina result for cross-section
Lecture 38 - Photon polarisation sums, Pair production through annihilation
Lecture 39 - Unpolarised and polarised cross-sections
Lecture 40 - Helicity properties, Bound state formation
Lecture 41 - Bound state decay, Non-relativistic potentials
Lecture 42 - Lagrangian formulation of QED, Divergences in Green's functions, Superficially divergent 1-loop
Lecture 43 - Infrared divergences due to massless particles, Renormalisation and finite physical results
Lecture 44 - Symmetry constraints on Green's functions, Furry's theorem, Ward-Takahashi identity, Spontaneous
Lecture 45 - Status of QED, Organisation of perturbative expansion, Precision tests