NPTEL Video Course - Physics - NOC:Introduction to Non-linear Optics and its Applications

Subject Co-ordinator - Prof. Samudra Roy

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - 1st, 2nd, 3rd order QPM, SHG under depleted pump
Lecture 31 - Realistic calculation of SHG, 3 wave interaction
Lecture 32 - 3 wave interaction, Equation for pump, signal and idler wave, Non-collinear phase matching
Lecture 33 - Manley-Rowe Relation (3 wave mixing), Parametric down conversion
Lecture 34 - Parametric down conversion (Continued...), Optical Parametric Amplification (OPA)
Lecture 35 - Optical Parametric Amplification (OPA), Difference frequency generation under OPA
Lecture 36 - Sum frequency generation under OPA
Lecture 37 - OPA under non-phase matching condition, Expression of gain
Lecture 38 - Optical parametric Oscillator (OPO), Singly resonant oscillator
Lecture 39 - Doubly Resonant Oscillator (DRO)
Lecture 40 - Doubly Resonant Oscillator (DRO) (Continued...)
Lecture 41 - 3rd order nonlinear effect
Lecture 42 - Optical Kerr effect and Self-focusing, Symmetry in 3rd order susceptibility
Lecture 43 - Symmetry in 3rd order susceptibility (Continued...), Self Phase Modulation (SPM)
Lecture 44 - Self Phase Modulation (Continued...), Frequency Shift
Lecture 45 - Third Harmonic Generation(3HG), Energy conservation
Lecture 46 - Third Harmonic Generation (Continued...)
Lecture 47 - Third Harmonic Generation (Continued...), Cross Phase Modulation (XPM)
Lecture 48 - Cross Phase Modulation (Continued...), Nonlinear Absorption
Lecture 49 - Four Wave Mixing
Lecture 50 - Four Wave mixing (Continued...)
Lecture 51 - Parametric Amplification under FWM
Lecture 52 - Parametric Amplification under FWM (Continued...)
Lecture 53 - Optical Phase Conjugation
Lecture 54 - Raman Scattering
Lecture 55 - Stimulated Raman Scattering
Lecture 56 - Raman Amplification
Lecture 57 - Raman Amplification (Continued...)
Lecture 58 - Linear pulse propagation
Lecture 59 - Nonlinear Pulse propagation
Lecture 60 - Optical Soliton