

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

NPTEL Video Course - Mathematics - NOC:Computational Number Theory and Algebra

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Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Introduction
Lecture 2 - Background
Lecture 3 - GCD algorithm and Chinese Remainder Theorem
Lecture 4 - Fast polynomial multiplication
Lecture 5 - Fast polynomial multiplication (Continued...)
Lecture 6 - Fast integer multiplication and division
Lecture 7 - Fast integer arithmetic and matrix multiplication
Lecture 8 - Matrix Multiplication Tensor
Lecture 9 - Polynomial factoring over finite fields
Lecture 10 - Equi-degree factorization and idea of Berlekamp's algorithm
Lecture 11 - Berlekamp's algorithm as a reduction method
Lecture 12 - Factoring over finite fields
Lecture 13 - Reed Solomon Error Correcting Codes
Lecture 14 - List Decoding
Lecture 15 - Bivariate Factorization - Hensel Lifting
Lecture 16 - Bivariate polynomial factoring (Continued...)
Lecture 17 - Multivariate Polynomial Factorization
Lecture 18 - Multivariate Factoring - Hilbert's Irreducibility Theorem
Lecture 19 - Multivariate factoring (Continued...)
Lecture 20 - Analysis of LLL algorithm
Lecture 21 - Analysis of LLL algorithm (Continued...)
Lecture 22 - Analysis of LLL-reduced basis algorithm and Introduction to NTRU cryptosystem
Lecture 23 - NTRU cryptosystem (Continued...) and Introduction to Primality testing
Lecture 24 - Randomized Primality testing
Lecture 25 - Deterministic primality test (AKS) and RSA cryptosystem
Lecture 26 - Integer factoring
Lecture 27 - Pollard's $p-1$, Fermat, Morrison-Brillhart, Quadratic and Number field sieve methods

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