



# Computational Algebraic Number Theory

By Michael Pohst

Birkhauser. Paperback. Book Condition: New. Paperback. 90 pages. Dimensions: 9.4in. x 6.6in. x 0.5in. Computational algebraic number theory has been attracting broad interest in the last few years due to its potential applications in coding theory and cryptography. For this reason, the Deutsche Mathematiker Vereinigung initiated an introductory graduate seminar on this topic in Dsseldorf. The lectures given there by the author served as the basis for this book which allows fast access to the state of the art in this area. Special emphasis has been placed on practical algorithms - all developed in the last five years - for the computation of integral bases, the unit group and the class group of arbitrary algebraic number fields. Contents: Introduction Topics from finite fields Arithmetic and polynomials Factorization of polynomials Topics from the geometry of numbers Hermite normal form Lattices Reduction Enumeration of lattice points Algebraic number fields Introduction Basic Arithmetic Computation of an integral basis Integral closure Round-Two-Method Round-Four-Method Computation of the unit group Dirichlets unit theorem and a regulator bound Two methods for computing  $r$  independent units Fundamental unit computation Computation of the class group Ideals and class number A method for computing the class group Appendix The number field...



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