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Titolo	Lattices Applied to Coding for Reliable and Secure Communications // by Sueli I.R. Costa, Frédérique Oggier, Antonio Campello, Jean-Claude Belfiore, Emanuele Viterbo
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Disciplina	511.33
Soggetti	Convex geometry Discrete geometry Coding theory Information theory Data encryption (Computer science) Convex and Discrete Geometry Coding and Information Theory Cryptology
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Nota di contenuto	Introduction -- Lattices and Applications -- Lattices from Codes -- Ideal Lattices -- Lattices and Spherical Codes -- Lattice and Index Coding.
Sommario/riassunto	This book provides a first course on lattices – mathematical objects pertaining to the realm of discrete geometry, which are of interest to mathematicians for their structure and, at the same time, are used by electrical and computer engineers working on coding theory and cryptography. The book presents both fundamental concepts and a wealth of applications, including coding and transmission over Gaussian channels, techniques for obtaining lattices from finite prime fields and quadratic fields, constructions of spherical codes, and hard lattice problems used in cryptography. The topics selected are covered in a level of detail not usually found in reference books. As the range of applications of lattices continues to grow, this work will appeal to

mathematicians, electrical and computer engineers, and graduate or advanced undergraduate in these fields.

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