1. Record Nr. UNINA9910483205103321

Titolo	Advances in Cryptology – CRYPTO 2017 : 37th Annual International Cryptology Conference, Santa Barbara, CA, USA, August 20–24, 2017, Proceedings, Part II / / edited by Jonathan Katz, Hovav Shacham
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
ISBN	9783319637150 3319637150
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XV, 735 p. 100 illus.)
Collana	Security and Cryptology, , 2946-1863 ; ; 10402
Disciplina	004
Soggetti	Cryptography Data encryption (Computer science) Data protection Computer networks Software engineering Electronic data processing - Management Coding theory Information theory Cryptology Data and Information Security Computer Communication Networks Software Engineering IT Operations Coding and Information Theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
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The three volume-set, LNCS 10401, LNCS 10402, and LNCS 10403, constitutes the refereed proceedings of the 37th Annual International Cryptology Conference, CRYPTO 2017, held in Santa Barbara, CA, USA, in August 2017. The 72 revised full papers presented were carefully reviewed and selected from 311 submissions. The papers are organized in the following topical sections: functional encryption; foundations; two-party computation; bitcoin; multiparty computation; award papers; obfuscation; conditional disclosure of secrets; OT and ORAM; quantum; hash functions; lattices; signatures; block ciphers; authenticated encryption; public-key encryption, stream ciphers, lattice crypto; leakage and subversion; symmetric-key crypto, and real-world crypto.