1.	Record Nr.	UNINA9910450697003321
	Titolo	Physical and numerical models in knot theory [[electronic resource]] : including applications to the life sciences / / editors, Jorge A. Calvo ... [et al.]
	Pubbl/distr/stampa	Hackensack, N.J., : World Scientific, c2005
	ISBN	1-281-90583-6
		9786611905835
		981-270-346-2
	Descrizione fisica	1 online resource (640 p.)
	Collana	K & E series on knots and everything ; ; v. 36
	Altri autori (Persone)	CalvoJorge Alberto <1971->
	Disciplina	514/.2242
	Soggetti	Knot theory
		Electronic books.
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Description based upon print version of record.
	Nota di bibliografia	Includes bibliographical references.
	Nota di contenuto	Preface; CONTENTS; Chapter 1 On the Theory of Solid Knots Otto Krotenheerdt and Sigrid Veit (translated by Ted Ashton); Chapter 2 A Tutorial on Knot Energies E. J. Janse van Rensburg; Chapter 3 Universal Energy Spectrum of Tight Knots and Links in Physics Roman V. Buniy and Thomas W. Kephart; Chapter 4 Knot Dynamics in a Driven Hanging Chain: Experimental Results Andrew Belmonte; Chapter 5 Biarcs, Global Radius of Curvature, and the Computation of Ideal Knot Shapes (4 color plates) M. Carlen, B. Laurie, J. H. Maddocks and J. Smutny Chapter 6 Knotted Umbilical Cords (2 color plates) Alain Goriely Chapter 7 Modelling DNA as a Flexible Thick Polymer: DNA Elasticity and Packaging Thermodynamics Cristian Micheletti and Davide Marenduzzo; Chapter 8 Monte-Carlo Simulations of Gel-Electrophoresis of DNA Knots C. Weber, M. Fleurant, P. De Los Rios and G. Dietler; Chapter 9 Atomic Force Microscopy of Complex DNA Knots F. Valle, M. Favre, J . Roca and G. Dietler; Chapter 10 Protein Folds, Knots and Tangles William R. Taylor Chapter 11 Tying Down Open Knots: A Statistical Method for Identifying Open Knots with Applications to Proteins (7 color plates) Kenneth C. Millett and Benjamin M. Sheldon Chapter 12 Scaling of the Average Crossing Number in Equilateral Random Walks, Knots and Proteins

Akos Dobay, Jacques Dubochet, Andrzej Stasiak and Yuanan Diao; Chapter 13 Folding Complexity in a Random-Walk Copolymer Model Gustavo A. Arteca; Chapter 14 Universal Characteristics of Polygonal Knot Probabilities Kenneth C. Millett and Eric J. Rawdon

Chapter 15 The Average Crossing Number of Gaussian Random Walks and Polygons Yuanan Diao and Clam Ernst Chapter 16 Rope length of Tight Polygonal Knots Justyna Baransku, Piotr Pieranski an and Eric J. Rawdon; Chapter 17 A Fast Octree-Based Algorithm for Computing Ropelength Ted Ashton and Jason Cantarella; Chapter 18 Topological Entropic Force between a Pair of Random Knots Forming a Fixed Link Tetsuo Deguchi; Chapter 19 Under-Knotted and Over-Knotted Polymers: 1. Unrestricted Loops Nathan T. Moore, Rhonald C. Lua and Alexander Yu. Grosberg

Chapter 20 Under-Knotted and Over-Knotted Polymers: 2. Compact Self-Avoiding Loops Rhonald C. Lua, Nathan T. Moore and Alexander Yu. Grosberg Chapter 21 On the Mean Gyration Radius and the Radial Distribution Function of Ring Polymers with Excluded Volume under a Topological Constraint Miyuki K. Shimamura and Tetsuo Deguchi; Chapter 22 Thermodynamics and Topology of Disordered Knots. Correlations in Trivial Lattice Knot Diagrams S. K. Nechaev and O. A. Vasilyev; Chapter 23 Generating Large Random Knot Projections Yuanan Diao, Claus Ernst and Uta Ziegler

Chapter 24 Minimal Flat Knotted Ribbons Louis H. Kauffman

| Sommario/riassunto | The physical properties of knotted and linked configurations in space have long been of interest to mathematicians. More recently, these properties have become significant to biologists, physicists, and engineers among others. Their depth of importance and breadth of application are now widely appreciated and valuable progress continues to be made each year. This volume presents several contributions from researchers using computers to study problems that would otherwise be intractable. While computations have long been used to analyze problems, formulate conjectures, and search for special |