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Collana	Lecture Notes in Computer Science, , 0302-9743 ; ; 2943
Disciplina	621.39/1
Soggetti	Mathematical logic Computers Chemistry, Physical and theoretical Algorithms Artificial intelligence Bioinformatics Mathematical Logic and Foundations Computation by Abstract Devices Theoretical and Computational Chemistry Algorithm Analysis and Problem Complexity Artificial Intelligence
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	New Experimental Tools -- A Lab-on-a-Chip Module for Bead Separation in DNA-Based Concept Learning -- Parallel Translation of DNA Clusters by VCSEL Array Trapping and Temperature Control with Laser Illumination -- Chemical Switching and Molecular Logic in Fluorescent-Labeled M-DNA -- RCA-Based Detection Methods for Resolution Refutation -- Theory -- Word Design for Molecular Computing: A Survey -- Time-Varying Distributed H Systems with Parallel Computations: The Problem Is Solved -- Deadlock Decidability

in Partial Parallel P Systems -- Computer Simulation and Sequence Design -- Languages of DNA Based Code Words -- Secondary Structure Design of Multi-state DNA Machines Based on Sequential Structure Transitions -- Analyzing Secondary Structure Transition Paths of DNA/RNA Molecules -- Self-Assembly and Autonomous Molecular Computation -- Self-Assembled Circuit Patterns -- One Dimensional Boundaries for DNA Tile Self-Assembly -- Proofreading Tile Sets: Error Correction for Algorithmic Self-Assembly -- Experimental Solutions -- A DNA-Based Memory with In Vitro Learning and Associative Recall -- Efficiency and Reliability of Semantic Retrieval in DNA-Based Memories -- Nearest-Neighbor Thermodynamics of DNA Sequences with Single Bulge Loop -- New Computing Models -- Mathematical Considerations in the Design of Microreactor-Based DNA Computers -- Towards a Re-programmable DNA Computer -- In Vitro Translation-Based Computations -- Autonomous Biomolecular Computer Modeled after Retroviral Replication -- Biomolecular Computing by Encoding of Regulated Phosphorylation-Dephosphorylation and Logic of Kinase-Phosphatase in Cells -- Conformational Addressing Using the Hairpin Structure of Single-Strand DNA.

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### Sommario/riassunto

Biomolecular computing is an interdisciplinary field that draws together molecular biology, DNA nanotechnology, chemistry, physics, computer science and mathematics. The annual international meeting on DNA-based computation has been an exciting forum where scientists of different backgrounds who share a common interest in biomolecular computing can meet and discuss their latest results. The central goal of this conference is to bring together experimentalists and theoreticians whose insights can calibrate each others' approaches. The 9th Annual International Meeting on DNA Based Computers was held during June 1–4, 2003 in the University of Wisconsin, Madison, USA. The meeting had 106 registered participants from 12 countries around the world. On the first day of the meeting, we had three tutorials: the first was on self-assembly of DNA nano structures which focused on the basic techniques of using designed DNA nano molecules to be self-assembled onto larger structures for computational purposes. This tutorial was given by Hao Yan of Duke University. The second tutorial was given by Chengde Mao of Purdue University in which Dr. Mao presented basic DNA biochemistry that was designed for non-experimentalists. The third tutorial was given by Max Garzon of the University of Memphis. Dr. Garzon gave a lecture on computational complexity which was tailored for non-computer scientists. The next three days were for invited plenary lectures, and regular oral and poster presentations. Invited plenary lectures were given by Helen Berman of Rutgers University (USA), Giancarlo Mauri of the University of Milan (Italy), Guenter von Kiedrowski of Ruhr University (Germany), and Sorin Istrail of Celera/Applied Biosystems. The organizers sought to attract the most significant recent research with the highest impact on the development of the discipline.

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