1. Record Nr. UNINA9910674354103321

Autore	Atif Muhammad
Titolo	Understanding behaviour of distributed systems using mCRL2 / / Muhammad Atif and Jan Friso Groote
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2023] ©2023
ISBN	3-031-23008-6
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (241 pages)
Collana	Studies in Systems, Decision and Control, , 2198-4190 ; ; 458
Disciplina	004.36
Soggetti	Electronic data processing - Distributed processing System analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introducing mCRL2 -- Automata to Represent Behaviour -- Communicating processes -- Behavioural Equivalences -- Data Types and Data-dependent Behaviour -- Model-Checking -- The Modal μ-Calculus -- Linear Processes and Parameterised Boolean Equation Systems -- Applications: Puzzles and Games -- Applications: Distributed Algorithms.
Sommario/riassunto	This book helps readers easily learn basic model checking by presenting examples, exercises and case studies. The toolset mCRL2 provides a language to specify the behaviour of distributed systems, in particular where there is concurrency with inter-process communication. This language allows us to analyse a distributed system with respect to its functional requirements. For example, biological cells, supply chain management systems, patient support platforms, and communication protocols. The underlying technique is based on verifying requirements through model checking. The book explains the syntax of mCRL2 and offers modelling tips and tricks.

2. Record Nr. UNINA9910300425703321

Autore	Wall Michael L
Titolo	Quantum Many-Body Physics of Ultracold Molecules in Optical Lattices : Models and Simulation Methods / / by Michael L. Wall
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015
ISBN	3-319-14252-6
Edizione	[1st ed. 2015.]
Descrizione fisica	1 online resource (391 p.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	530.1
Soggetti	Phase transformations (Statistical physics) Condensed matter Physics Atoms Quantum Gases and Condensates Numerical and Computational Physics, Simulation Atoms and Molecules in Strong Fields, Laser Matter Interaction
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	Part I: Introduction -- General Introduction -- Models for Strongly Correlated Lattice Physics -- Part II: The Molecular Hubbard Hamiltonian -- Emergent Timescales in Entangled Quantum Dynamics of Ultracold Molecules in Optical Lattices -- Hyperfine Molecular Hubbard Hamiltonian -- Part III: The Fermi Resonance Hamiltonian -- Microscopic Model for Feshbach Interacting Fermions in an Optical Lattice with Arbitrary Scattering Length and Resonance Width -- Part IV: Matrix Product States -- Matrix Product States: Foundations -- Out-of-Equilibrium Dynamics with Matrix Product States -- The Infinite Size Variational Matrix Product State Algorithm -- Finite Temperature Matrix Product State Algorithms and Applications -- Part V: Open Source Code and Educational Materials -- Open Source Code Development -- Educational Materials -- Part VI: Conclusions and Appendices -- Conclusions and Suggestions for Future Research -- Appendix A: Documentation for ALPS V2.0 TEBD Code -- Appendix B: Educational

	Materials: A Gentle Introduction to Time Evolving Block Decimation (TEBD) -- Appendix C: Educational Materials: Introduction to MPS Algorithms.
Sommario/riassunto	This thesis investigates ultracold molecules as a resource for novel quantum many-body physics, in particular by utilizing their rich internal structure and strong, long-range dipole-dipole interactions. In addition, numerical methods based on matrix product states are analyzed in detail, and general algorithms for investigating the static and dynamic properties of essentially arbitrary one-dimensional quantum many-body systems are put forth. Finally, this thesis covers open-source implementations of matrix product state algorithms, as well as educational material designed to aid in the use of understanding such methods.