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Titolo	Beyond Markovian Dissipation at the Nanoscale : Towards Quantum Design Rules for Bio-organic Nanodevices // by Thibaut Lacroix
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Disciplina	530.12
Soggetti	Quantum theory Thermodynamics Nanoelectromechanical systems Quantum computing Biophysics Nanoscience Quantum Physics Nanoscale Devices Quantum Information Nanoscale Biophysics
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Nota di contenuto	Background -- Introduction -- Theory of Open Quantum Systems -- Methods -- Tensor Networks -- Chain Mapping of Bosonic Environments -- Influence of the ordering of the chains modes -- Applications -- Unveilling non Markovian Signalling -- Dissipation in multi component Nanodevices -- Conclusions and Prospects.
Sommario/riassunto	This book proposes innovative and timely modeling, as well as simulation strategies based on tensor networks, to tackle the difficult problem of describing the dynamics of open quantum systems at the molecular or nanometer scale beyond a Markovian treatment. Among the many insights it delivers, the work includes calculations of the dynamics of a quantum system coupled to a bosonic environment that can be potentially structured and/or possess spatial correlations. The relevance of these strategies is exemplified with the analysis of

complex bio-inspired nanodevices. Researchers in the field will find here a clear and reliable contribution to the understanding of open quantum systems in a still little-explored regime where the reservoirs are no longer considered as simple baths but as sub-systems treated on an equal footing with the reduced system of interest. Moreover, the author discusses how to handle the situation of a system coupled to multiple baths. This is a very important and generic scenario, crucial, for instance, when discussing non-equilibrium steady states.

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