



entropy



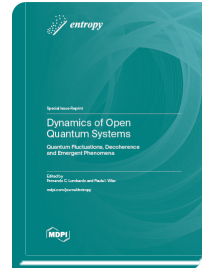
*Special Issue Reprint*

## **Dynamics of Open Quantum Systems: Quantum Fluctuations, Decoherence and Emergent Phenomena**

[www.mdpi.com/books/reprint/10227](http://www.mdpi.com/books/reprint/10227)

Edited by  
Fernando C. Lombardo  
Paula I. Villar

ISBN 978-3-7258-2650-6 (Hardback)  
ISBN 978-3-7258-2649-0 (PDF)



All real-world quantum systems interact with their surrounding environment to some extent. No matter how weak the coupling that prevents the system from being isolated, the evolution of an open quantum system is eventually plagued by non-unitary features, such as decoherence and dissipation. Decoherence is a quantum effect where the system loses its ability to exhibit coherent behavior. Nowadays, decoherence stands as a serious obstacle in quantum information processing. As the manipulation of quantum coherence in experiments has progressed, the need to better understand, control, and utilize dissipative non-equilibrium dynamics of quantum systems has grown in importance. This has ranged from fundamental questions associated with the quantum-to-classical transition and quantum thermodynamics innovation in quantum optics and cavity/circuit quantum electrodynamics. Current studies of many-body dynamics, ultracold atoms in optical lattices, trapped ions, superconducting systems, nanoelectro-mechanical systems, and quantum fields under the influence of external conditions offer new challenges to address questions regarding quantum systems far from equilibrium. On the theoretical side, quantum trajectory-based methods could be the key to both quantum nanodevice design and exploration of new regimes of quantum mechanics and quantum measurement, as well as applications to various quantum technologies.



Order Your Print Copy  
You can order print copies at  
[www.mdpi.com/books/reprint/10227](http://www.mdpi.com/books/reprint/10227)

MDPI Books offers quality open access book publishing to promote the exchange of ideas and knowledge in a globalized world. MDPI Books encompasses all the benefits of open access – high availability and visibility, as well as wide and rapid dissemination. With MDPI Books, you can complement the digital version of your work with a high quality printed counterpart.



## Open Access

Your scholarly work is accessible worldwide without any restrictions. All authors retain the copyright for their work distributed under the terms of the Creative Commons Attribution License.



## Author Focus

Authors and editors profit from MDPI's over two decades of experience in open access publishing, our customized personal support throughout the entire publication process, and competitive processing charges as well as unique contributor discounts on book purchases.



## High Quality & Rapid Publication

MDPI ensures a thorough review for all published items and provides a fast publication procedure. State-of-the-art research and time-sensitive topics are released with a minimum amount of delay.



## High Visibility

Due to our global network and well-known channel partners, we ensure maximum visibility and broad dissemination. Title information of books is sent to international indexing databases and archives, such as the Directory of Open Access Books (DOAB), and the Verzeichnis Lieferbarer Bücher (VLB).



## Print on Demand and Multiple Formats

MDPI Books are available for purchase and to read online at any time. Our print-on-demand service offers a sustainable, cost-effective and fast way to publish MDPI Books printed versions.