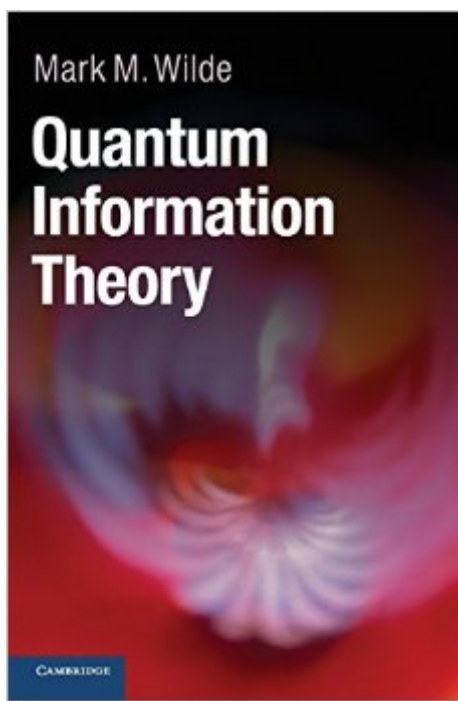


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# Quantum Information Theory



## Synopsis

Finally, here is a modern, self-contained text on quantum information theory suitable for graduate-level courses. Developing the subject 'from the ground up' it covers classical results as well as major advances of the past decade. Beginning with an extensive overview of classical information theory suitable for the non-expert, the author then turns his attention to quantum mechanics for quantum information theory, and the important protocols of teleportation, super-dense coding and entanglement distribution. He develops all of the tools necessary for understanding important results in quantum information theory, including capacity theorems for classical, entanglement-assisted, private and quantum communication. The book also covers important recent developments such as superadditivity of private, coherent and Holevo information, and the superactivation of quantum capacity. This book will be warmly welcomed by the upcoming generation of quantum information theorists and the already established community of classical information theorists.

## Book Information

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## Customer Reviews

Quantum information theory (QIT)--a generalization of Shannon's classical information theory to account for the quantum-physical nature of information, information carriers, channels, and measurements--is a fast developing field, which has matured immensely over the past two decades or so. The literature in QIT is quite extensive by now, and scattered. There has been a growing need for a book that puts all the major concepts together in one place--in a unified and simple

notation and style--that is understandable by a beginner in the field (with very little or no background in quantum physics), as well as an experienced physicist, engineer, or a computer scientist who would like to learn specific concepts as per their need. I feel that this book by Mark Wilde fills this gap really well. It puts quantum information theory in a unified footing with the classical (Shannon's) theory of information, and builds up--in a ground-up fashion--several nuances and properties of information in the quantum setting. I have collaborated with Mark quite fruitfully on several projects, and I can say that his depth and breadth of knowledge of quantum information theory is very impressive. Mark's clarity of thought and knowledge of quantum information theory and his propensity to teach difficult concepts in a simple fashion to someone not so knowledgeable in the field, are both reflected in his book. My own research focuses on application of quantum theories of information and estimation to optical communication and sensing, and I have lately found myself using Mark's book quite often as a reference, as opposed to looking through articles in journals and arxiv.org.

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