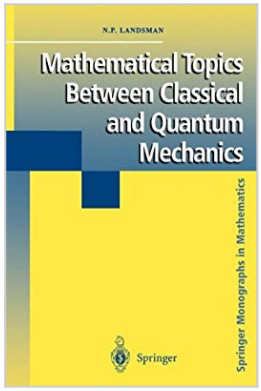


# Mathematical Topics Between Classical and Quantum Mechanics (Springer Monographs in Mathematics)

*By Nicholas P. Landsman*



**Mathematical Topics Between Classical and Quantum Mechanics (Springer Monographs in Mathematics)** By Nicholas P. Landsman

This monograph draws on two traditions: the algebraic formulation of quantum mechanics as well as quantum field theory, and the geometric theory of classical mechanics. These are combined in a unified treatment of the theory of Poisson algebras of observables and pure state spaces with a transition probability, which leads on to a discussion of the theory of quantization and the classical limit from this perspective. A prototype of quantization comes from the analogy between the C*- algebra of a Lie groupoid and the Poisson algebra of the corresponding Lie algebroid. The parallel between reduction of symplectic manifolds in classical mechanics and induced representations of groups and C*- algebras in quantum mechanics plays an equally important role. Examples from physics include constrained quantization, curved spaces, magnetic monopoles, gauge theories, massless particles, and $theta$- vacua. Accessible to mathematicians with some prior knowledge of classical and quantum mechanics, and to mathematical physicists and theoretical physicists with some background in functional analysis.

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