

1. Record Nr.	UNINA9910782277503321
Autore	Janssen M (Martin)
Titolo	Fluctuations and localization in mesoscopic electron systems [[electronic resource] /] / Martin Janssen
Pubbl/distr/stampa	Singapore ; ; River Edge, N.J., : World Scientific, c2001
ISBN	1-281-94829-2 9786611948290 981-279-892-7
Descrizione fisica	1 online resource (219 p.)
Collana	World Scientific lecture notes in physics ; ; v. 64
Disciplina	530.41
Soggetti	Fluctuations (Physics) Quantum theory Mesoscopic phenomena (Physics)
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 (p. 191-198) and index.
Nota di contenuto	Contents ; Preface ; Chapter 1 Introduction ; Chapter 2 Experimental Facts ; 2.1 Aharonov- Bohm Effect ; 2.2 Conductance Fluctuations ; 2.3 Localization ; 2.4 Quantum Hall Effects ; 2.5 Quantum Dots ; Chapter 3 Basic Theoretical Models and Tools 3.1 Relevant Scales and Observables 3.2 The Independent Electron Approximation ; 3.3 Model Hamiltonian and Green's Function ; 3.4 Disorder Diagrams and Field Theory ; 3.5 Scattering Matrix Modeling ; 3.6 Fokker- Planck Equations ; Chapter 4 Idealized Systems ; 4.1 Localized Systems 4.2 Delocalized Systems 4.3 Random Matrices and Symmetry ; Chapter 5 Towards Realistic Systems ; 5.1 Concept of Scaling ; 5.2 Distributions and Typical Values ; 5.3 Corrections at Finite Conductances ; 5.4 Quasi-One-Dimensional Systems

## Chapter 6 The Localization-Delocalization Transition

6.1 Finite Size Scaling

; 6.2 Real-Space

Renormalization

; 6.3 Multifractality of Critical

States

; 6.4 Point-Contact Conductance

; 6.5 Order Parameter and Scaling Variable

; Bibliography

; Index

---

### Sommario/riassunto

The quantum phenomena of tunneling and interference show up not only in the microscopic world of atoms and molecules, but also in cold materials of the real world, such as metals and semiconductors. Though not fully macroscopic, such *mesoscopic* systems contain a huge number of particles, and the holistic nature of quantum mechanics becomes evident already in simple electronic measurements. The measured quantity fluctuates as a function of applied fields in an unpredictable, yet reproducible way. Despite this fingerprint character of fluctuations, their statistical properties are univer

---