Quantum Coherence in Mesoscopic Systems #632 pages #9780306438899 #B. Kramer #1991 #Springer US, 1991

This book describes manifestations of classical dynamics and chaos in the quantum properties of mesoscopic systems. During the last two decades mesoscopic physics has evolved into a rapidly progressing and exciting interdisciplinary field of physics. The first part of the book deals with integrable and chaotic classical dynamics with particular emphasis on the semiclassical description of spectral correlations, thermodynamic properties and linear response functions. Quantum dephasing in mesoscopic systems (Y. Imry). Decoherence in mesoscopic systems (R.A. Webb et al.). Quantum eraser and quantum Zeno effect in mesoscopic physics (G. Hackenbroich, B. Rosenow, H.A. WeidenmÃ¼ller). New "coherent" bilayer quantum Hall states (A. Sawada et al.). Electron-electron scattering in two-dimensional electron gas under spatially modulated magnetic field (M. Kato et al.). Low-energy transport through a 1D Mott-Hubbard insulator (V.V. Ponomarenko, N. Nagaosa). Superconductors and Single Electronics.Â The resulting proceedings will be welcomed both as a good introductory book on quantum coherence and decoherence by newcomers to the field and as a reference book for experts in this dynamic area. Details. No. of pages Finally, it reviews the essential properties of these mesoscopic quantum systems and describes the key importance of the scattering length to condensate stability. Reviews. â€˜â€¦ the strength of the book is in its references - over 450 of them, which admirable covers the field â€¦ the book provides a comprehensive overview and a source of original references for researchers in the field.â€™ Source: Contemporary Physics. Aa. Taking the example of mesoscopic spin systems, the origin of irreversibility is discussed on the basis of the Landau-Zener model. A classical counterpart of this model is described enabling, in particular, intuitive understanding of most aspects of quantum spin dynamics. The spin dynamics of mesoscopic spin systems (SMM or RE systems) becomes coherent if they are well isolated. The study of the damping of their Rabi oscillations gives access to most relevant decoherence mechanisms by different environmental baths, including the electromagnetic bath of microwave excitation. This type of decoher