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Quantum Phenomena in Mesoscopic Systems (International ... 
Gate voltages or tunnel junctions confine electrons in semiconducting heterostructures, including quantum dots (QD), quantum wires (QW) or two-dimensional layers (2d electron gas). These electron systems can have striking quantization phenomena of charge and conductance as it occurs in quantum point contacts (QPC) and quantum Hall systems.
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In physics, the notion of mesoscopic quantum phenomena is generally used for systems with dimensions somewhere in the middle (in Greek: meso = middle) between the microscopic and the macroscopic world. In practice, mesoscopic systems mostly range between a few and a few hundred nanometers.

Mesoscopic Quantum Phenomena | SpringerLink
Mesoscopic Transport Phenomena. Without too much simplification, all novel quantum phenomena to be discussed in this section are caused by two effects, which to a large extent determine the spectrum of the eigenvalues of the transmission matrices in the diffusive regime, $L \gg l$. The first is quantum interference of transition amplitudes corresponding to different electron paths through the disordered medium.

Quantum Phenomena - an overview | ScienceDirect Topics
oses of quantum transport such as diffusive, ballistic, and adiabatic are explained. The effect of interactions and inelastic scattering along with the characteristic coherent effects of mesoscopic systems give interesting new mesoscopic effects, such as Coulomb Blockade and Kondo Resonance. The basic physics of these phenomena is explained in simple language.

GENERAL ARTICLE Quantum Transport in Mesoscopic Systems
Thus, mesoscopic physics has a close connection to the fields of nanofabrication and nanotechnology. Devices used in nanotechnology are examples of mesoscopic systems. Three
categories of new electronic phenomena in such systems are interference effects, quantum confinement effects and charging effects.

**Mesoscopic physics - Wikipedia**
Since the 1950’s, probing higher-order correlation functions in photon and atomcavity systems has led to a more complete understanding of the fundamental quantum statistical [2, 3] and quantum ...

**Quantum Noise in Mesoscopic Physics - ResearchGate**
The topic of the symposium was Physics 0/ Mesoscopic Systems. Mesoscopic systems have been developed band in band with the recent progress in nanotechnology and are the melting pot of basic science and technology. In nanostructures, the quantum effect of the electron wave manifests itself because of the limited dimensionality of the structure.

**Transport Phenomena in Mesoscopic Systems | SpringerLink**
As such, mesoscopic phenomena can be observed in systems within a wide range of sizes going from the nanometer regime, to a few micrometers in high mobility semiconductor structures1.

**Electronic Transport in Mesoscopic Systems**

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In this thesis, we study persistent currents and quantum critical phenomena in the systems of mesoscopic physics. As an introduction in Chapter 1 we familiarize the reader with the area of mesoscopic physics. We explain how mesoscopic systems are different from quantum systems of single atoms and molecules and bulk systems with an Avogadro number of elements.

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statistical theory of complex wave scattering and quantum transport in classically chaotic and disordered systems. The novel approach is a maximum-entropy viewpoint, which reveals the statistical regularity of the phenomena in a natural way.

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