UNIVERSITÄT DUISBURG ESSEN

PHYSIK E=

Physikalisches Kolloquium

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Hörsaal MC 122

Shot Noise in Transport Through Quantum Dots: Toolbox to Study Quantum Physics

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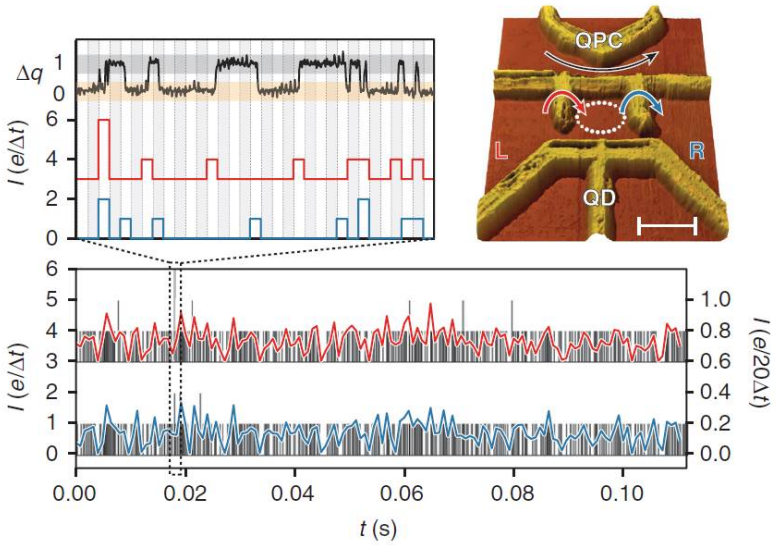

Shot noise in electronic transport originates from the discrete nature of the electric charge. It was first introduced in 1918 by Walter Schottky. Later on it was understood that measurements of fluctuations in the electric current, shot noise, can be used as a tool to understand correlations in that system. Therefore, in studying shot noise in transport through quantum dots, i.e. quasi-zero dimensional systems in semiconductors, one has access to quantum mechanical correlations in quantum dots.

In the talk studies of shot noise in transport through quantum dots will be reviewed including finite-frequency spectra, quantum statistics, and shot-noise experiments relating electron transport to quantum optics as e.g. in studies of quantum memory effects, partitioning of electron pairs, or in experiments involving feedback.