Quantum noise in mesoscopic systems — Wolfgang Belzig
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Full counting statistics aims at a complete characterization of the distribution of measurement outcomes. In my talk I will demonstrate how this concept allows to investigate quantum correlations in a variety of mesoscopic systems. Three examples will be discussed:

a) In analogy to Schottky’s work on the current fluctuations in a vacuum diode, shot noise in superconducting contacts allows to identify the nature of the elementary charge transfer events.

b) The Coulomb interaction in complex quantum dots or molecules leads to a strongly correlated current statistics.

c) The density fluctuation statistics in a fermionic quantum gas reflects the crossover from a superfluid state to a molecular Bose-Einstein condensate.