

Eugene Wigner Colloquium

joint event of GRK 1558 and SFB 910



Prof. Gernot Alber

TU Darmstadt

“Quantum Electrodynamical Processes in Large Cavities”

The control of elementary quantum electrodynamical processes, such as emission or absorption of individual photons, is important for the further development of quantum technologies in the area of quantum information processing. Motivated by current experimental activities in this talk recent theoretical developments are discussed which allow for a detailed systematic analysis of such elementary quantum electrodynamical processes. In particular, we concentrate on cases in which few photon states of the electromagnetic radiation field are resonantly coupled to individual atoms in large cavities. In the context of quantum information processing such extreme multimode scenarios involving few photon states are of particular current interest for future possible realizations of a quantum repeater.



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