universität wien

Quantum Optics, Quantum Nanophysics & Quantum Information

Institut für Quantenoptik und Quanteninformation

INVITATION

to a talk given by

Witlef Wieczorek

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Multi-photon entanglement: High rates and interesting states

Abstract :

Multi-partite entanglement plays a decisive role in most quantum information tasks. Thus, the experimental realization of entanglement is crucial for progressing beyond classical information processing. To this end, photons are a leading approach for observing entangled quantum states of multiple qubits. As photon source the non-linear process of spontaneous parametric down conversion (SPDC) driven by ultrashort pump pulses is widely applied. We present a novel SPDC pump source based on a femtosecond enhancement cavity in the ultraviolet wavelength regime. The source increases the available SPDC pump power by more than a factor of five and in this way allows high-rate multi-photon experiments for in-depth state characterizations. The photon source together with a linear optical network is utilized for the observation of symmetric, multi-partite entangled Dicke states. Dicke states are, besides graph states, another important group of states for quantum information processing, for example for telecloning or quantum metrology, which is presented as well.

Wednesday, 3rd March, 2010

11:00 s.t.

Seminar Room 2.08, IQOQI, Boltzmanngasse 3, 1090 Wien

Hosted by: Prof. Markus Aspelmeyer