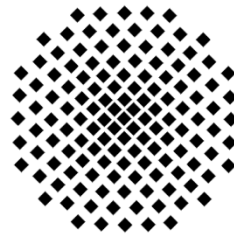


Stuttgarter Physikalisches Kolloquium

Fachbereich Physik, Universität Stuttgart
Max-Planck-Institut für Festkörperforschung
Max-Planck-Institut für Intelligente Systeme

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Hörsaal V 57.01

Universität Stuttgart, Pfaffenwaldring 57, 70569 Stuttgart-Vaihingen

Gastgeber: Prof. Peter Michler, Universität Stuttgart, Telefon: 0711 - 685-64660

Photonic quantum information: nano-photonics routes to scalability

John Rarity
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Abstract

This talk will introduce the wave and particle nature of light illustrated by early work on multiphoton interference and entanglement. As well as having foundational implications, the development of multi-photon entangled states or cluster states can be applied to scalable quantum information processors. This has propelled the development of integrated quantum photonics in our group in Bristol. However this scalability is severely limited by the need for deterministic entanglement generation which requires non-linearity between separate photons, almost impossible to engineer in conventional non-linear media. Here I will discuss how this can be done in nano-photonic systems mediated by an intermediate spin qubit in a spin photon interface.