Graduate School Seminar

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INSTITUT FÜR PHYSIK

Talks in SS 2018

Traditio et Innovatio

Universität Rostock

05th July 2018, **15:00 s.t.**

Steffen Weimann
AG Experimental Solid-State Optics

Fractional Fourier transforms and the weak coupling regime of waveguide arrays

The talk presents an implementation of the fractional Fourier transform as an integrated operation on an optical chip. The specific discretization allows the transform to be computed as a unitary evolution involving only Jacoby polynomials, i.e. no summation or integration is required to compute this fractional Fourier transform, which contains the Fourier transform as a special case. In experiments with two-photon light, the presented discretized transform is shown to produce a characteristic entanglement of the photon positions, which features the Fourier-suppression law for this transform.
In the second part of the talk, the term "weak coupling regime" is investigated for laser-written waveguide arrays. In fact, the before presented optical chip does not perform the fractional Fourier transform if some of the waveguides are strongly coupled. The general coupled mode theory of strongly coupled waveguides is discussed and there parameters are evaluated experimentally for laser-written waveguides.

Talk: English
Slides: English

Location: Institute of Physics, Albert-Einstein-Str. 24, HS 1