TRR 142
Tailored Nonlinear Photonics

TRR Guest Scientist Lecture / Seminar

Date/Time: 22.09.2016 / 2pm
Location: Paderborn, P8.4.09

Birgit Stiller
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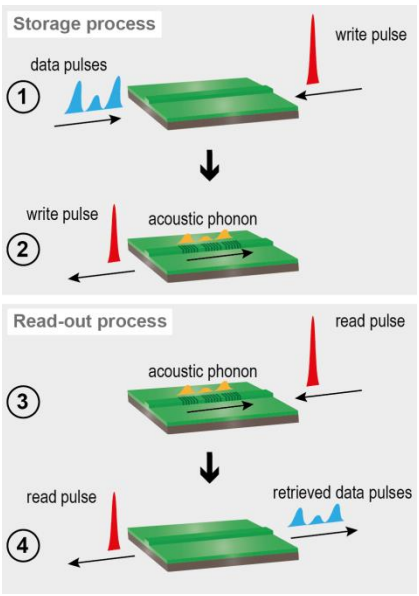
Phonon-photon interaction for on-chip light storage

Abstract:

Brillouin scattering is a fundamental nonlinear opto-acoustic interaction present in optical fibres and other waveguides with important implications in fields ranging from modern telecommunication networks to smart optical fibre sensors. Also in integrated photonic circuits, the interaction of optical and acoustic waves has been observed and this enables new advances in microwave photonics, Brillouin lasers and optical phonon-based memory. I will present our recent results with focus on storing optical pulses as acoustic phonons. This new concept allows for transferring the information from an optical to an acoustic wave whose velocity is 5 orders of magnitude slower. By transferring the information from the acoustic wave back to the optical domain, the information is delayed. We show the storage of the entire coherent information of light with a broad bandwidth at all wavelength within the transparency window of the waveguide material.



Principle of a phonon-based optical buffer

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