Graduate School Seminar

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Light-sound interconversion in optomechanical Dirac materials

Analyzing the scattering and conversion process between photons and phonons coupled via radiation pressure in a circular quantum dot on a honeycomb array of optomechanical cells, we demonstrate the emergence of optomechanical Dirac physics. Specifically we prove the formation of polaritonic quasi-bound states inside the dot, and angle-dependent Klein tunneling of light and emission of sound, depending on the energy of the incident photon, the photon-phonon interaction strength, and the radius of the dot. We furthermore demonstrate that forward scattering of light or sound can almost switched off by an optically tuned Fano resonance; thereby the system may act as an optomechanical translator in a future photon-phonon based circuitry.

Talk: German
Slides: English

Location: Institute of Physics, Albert-Einstein-Str. 24, HS1

Talks in SS 2017

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