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Seminar über Quanten-, Atom- und Neutronenphysik (QUANTUM)

Dec. 16, 2021 at 2 p.m.
None

Prof. Irina Novikova
College of William & Mary, Williamsburg, Virginia/
USA

Seeing a quantum shadow: quantum noise imaging for low-light applications

For some light-sensitive substances it is crucial to be able to measure their optical properties with minimal light exposure. At the same time, low-light imaging is technically challenging due to the dark noise of a CCD camera. In this talk I will describe a new imaging techniques that relies on quantum fluctuation analysis to image opaque objects at low-photon environment. We demonstrate that both squeezed vacuum and thermal vacuum can be effectively used for this purpose. At the same time, we successfully eliminate the camera dark noise problems by realizing a camera-based homodyne detection.

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