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EXPLORING SIMILARITIES BETWEEN CLASSICAL AND QUANTUM SYSTEMS

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Analogies between different disciplines provide a powerful tool in understanding nature. As such, quantum-classical optical similarities offer new opportunities in manipulating classical optical fields or quantum states. In recent years, many of the ramifications of these concepts have come to fruition on several fronts in the general area of optics. What made this possible are some new advances in structure fabrication and beam synthesis techniques. In this talk, we will provide an overview of our activities in this field. As an example, we will consider accelerating optical wavepackets in the form of Airy beams as a means to bend light for applications in plasmonics, extreme nonlinear optics, and biology. Studying quantum inspired phenomena in artificial optical structures that would have been otherwise impossible to directly observe in their own habitat, like Anderson localization, parity-time (PT) symmetry, Bloch oscillations, Klein tunneling, etc. will be discussed. Finally, the possibility of quantum state engineering in periodic and random optical lattices will be reviewed in this talk.

Montag, 27. Mai 2013, 17:30 Uhr
(ab 17:00 Uhr Kaffee)

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