

IQSE AMO QO Seminar Series

Tuesday, March 14th, 11:30 am ZOOM & IQSE
seminar room (MPHY 578)

Pizza will be served for IQSE members at 11:00 am. The talk will start around 11:30 am

Dr. Jung-Tsung Shen

(Texas A&M University)

Coherent states of photonic dimers

ABOUT THE SPEAKER: I received my Ph.D. degree in condensed matter physics from MIT (under Patrick Lee, who was Marlan's student), and did a post-doc at the Ginzton Labs at Stanford University. While I was a graduate student, I received a Bell Labs fellowship and interned at the theoretical physics, semiconductor physics, and optical physics departments every summer. I am currently at the Electrical and Systems Engineering Department at Washington University in St. Louis. Our recent work in quantum photonic logic gates and quantum imaging won the 2018 NSF Quantum Leap Award and the 2021 Chan Zuckerberg Initiative Deep Tissue Imaging Award, respectively.

EVENT DETAILS: In recent years, the bound states of light quanta were theoretically proposed in engineered nonlinear optical media, and have since been experimentally confirmed in ultra-cold atom systems. The simplest realization of the photonic bound states is a two-photon dimer. Inspired by the remarkable optical properties of lasers and the penetrating insights into the role played by photons in the description of light beams offered by the coherent states, we investigate the scenarios of a different type of coherent many-photon quantum light source which, instead of single photons, outputs a coherent state of photonic dimers, and study the optical coherence properties of the photonic dimers. I shall also discuss, from a theoretical point of view, the generalizations of the coherent states of dimers when the overlaps between the dimers are varied via the controlled parameters of the system. In particular, we discuss the two limits which are of great scientific interests, namely, the Bose-Einstein condensation (BEC) and the Bardeen-Cooper-Schrieffer (BCS) limit, respectively.

ZOOM information:

<https://tamu.zoom.us/j/98156251523?pwd=QVdSdGxtL1UyY0g1L083SU5QR0QrUT09>

Meeting ID: 981 5625 1523

Passcode: 297578

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