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SEMINAR
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Blackbody Radiation Enhanced Superradiance in Rydberg Gases



SPEAKER: Zhengyang Bai, East China Normal University
Time: 1:30-2:30pm, Wednesday, October 28, 2020
Venue: Room A408, Optics Building, Minhang Campus, ECNU

Abstract:

In this talk, I shall report the theoretical and experimental research progresses of the superradiance of high-lying Rydberg states of caesium atoms, enhanced by room-temperature BBR photons in free space. We show that, due to high numbers of MW photons per mode in the BBR field, decay of single Rydberg atoms is orders of magnitude faster than in vacuum, which significantly increases strength of the Rydberg superradiance. Our study provides insights into the many body dynamics of interacting atoms coupled to thermal BBR, and might open a route to the design of blackbody thermometry at microwave frequencies via photon-atom interactions.

Biography:

Dr. Zhengyang Bai is currently an associate Researcher at East China Normal University (ECNU). He obtained his PhD in 2017 from at State Key Laboratory of Precision Spectroscopy, ECNU. In 2018, he moved to the University of Nottingham, UK, as a Postdoctoral Research Fellow. He has been appointed as an associate Researcher at the Key Laboratory of Precision Spectroscopy, ECNU starting from September 2020. His research direction is ultracold Rydberg atoms, non-equilibrium many body physics, and quantum information and quantum metrology.