University of Crete
Department of Physics

Physics Colloquium

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Quantum Optics in strong laser fields

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ABSTRACT

Strong laser-field physics (SLFP) and quantum-optics (QO), are two disjoined research areas founded on the classical and quantum description of the electromagnetic radiation, respectively. SLFP [1] led to groundbreaking discoveries ranging from relativistic electron acceleration to attosecond science, while, QO opened the way for fascinating achievements in quantum technology [2] advancing studies ranging from fundamental test of quantum theory to quantum information processing.

Despite the progress achieved in both research areas, they remained disconnected over the years. Here, after a brief introduction of SLFP and QO, I will present how we have managed to connect these research directions [3] and build the foundations for studies of quantum electrodynamics in strong-field physics and the development of a new class of non-classical light sources for applications in quantum technology.

References

[1] G. Mourou, *Rev. Mod. Phys.* **91**, 030501 (2019).
[2] A. Acín, et al. *New J. Phys.* **20**, 080201 (2018).
[3] M. Lewenstein et al., *Nature Phys.* **17**, 1104-1108 (2021).

ZOOM link:

https://zoom.us/j/95370775286?pwd=V3doVHdwMFUyOWI4Z1NyNHNvRHVNQT09