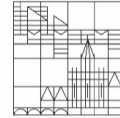


SFB 1432

# Colloquium

Universität  
Konstanz



May 25, 2023  
Talk at 15:15  
in P 603  
refreshment afterwards



**Dr. Gabriele Rainò**  
ETH Zürich

## Perovskite Nanocrystals as Non-Classical Light Sources: From Single Photon Emission to Superfluorescence

Besides conventional optoelectronic devices (LEDs and laser), colloidal nanocrystals (NCs) are pursued as non-classical light sources (i.e. single photon emitters) that might play a pivotal role in future quantum technologies, such as quantum cryptography and quantum sensing. Due to strongly reduced charge trapping on surface states and their defect-tolerant character, perovskite NCs become attractive as alternative quantum light sources. Indeed, very stable, blinking-free emission [1] has been observed at cryogenic temperatures with ultrafast (ca. 200 ps) radiative lifetime [2] and long exciton dephasing time [3]. In addition, when organized in highly-ordered three-dimensional superlattices, perovskite NCs exhibit superfluorescence (SF) [4,5], a cooperative emission of individual emitters that arises due to a coherent collective coupling to a common light field. The talk will review our recent achievements in the exploration of perovskite NCs as non-classical light sources and future developments.

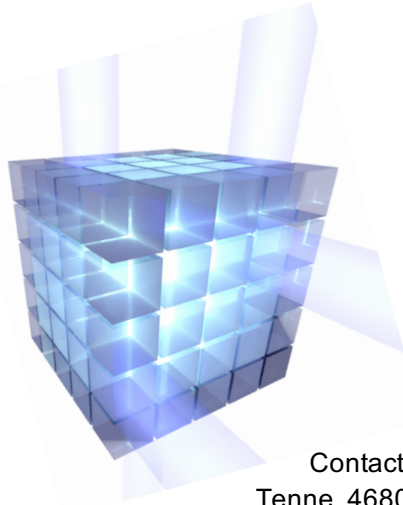
[1] G. Rainò et al., ACS Nano (2016), 10, 2485–2490.

[2] M. Becker et al., Nature (2018), 553, 189–193.

[3] M. Becker et al., Nanoletters (2018), 7546–7551.

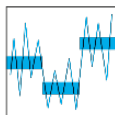
[4] G. Rainò et al., Nature (2018), 563, 671–675.

[5] I. Cherniukh et al., Nature (2021), 593, 535–542



Contact:  
Tenne, 4680

SFB 1432



[sfb1432.uni.kn](http://sfb1432.uni.kn)