GEMaC
Groupe d'Étude
de la Matière Condensée

CONTROLLING THE EMISSION OF COLLOIDAL QUANTUM DOTS: FROM THE SINGLE PHOTON MANIPULATION TO COLLECTIVE EFFECTS FOR THE GENERATION OF QUANTUM STATES OF LIGHT

The project takes place in the Quantum NanoPhotonics group in GEMaC laboratory. In the field of quantum information science, photons play a crucial role due to their ability to propagate through long distances with very small loss of coherence. In this context, the generation and the manipulation of quantum states of light can benefit from the numerous nanophotonics tools and devices. Modifying the electromagnetic environment of a single photon emitter using cavities [1] enables to fully control the spontaneous emission of a single photon source such as a quantum dot to achieve bright single photon sources (SPSs). In addition, the interplay between an assembly of nanoemitters and plasmonic

structures allows to design new types of light sources and to develop light-emitting quantum devices based on strong coupling and superradiance.

01/10/2022 au 30/09/2025

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ADDITIONAL INFORMATION

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