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## **【140】 Superfluorescence from lead halide perovskite quantum dot superlattices**

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Superfluorescence is a many-body collective coupling phenomenon, where coherence is established through spontaneously triggered correlations of quantum fluctuations from initially fully uncorrelated excited emitters. Here, we investigate densely packed cuboidal arrays of fully inorganic cesium lead halide perovskite quantum dots, known as superlattices and we observe key signatures of superfluorescence: A more than twenty-fold accelerated radiative decay with dynamically red-shifted emission, photon bunching, extension of the first-order coherence time and an intensity-dependent time delay after which the photon burst is emitted. Also, at high excitation density, the superfluorescent decay exhibits a Burnham-Chiao ringing behavior, reflecting the coherent Rabi-type interaction.

References:

Rainò, G.; Becker, M.A.; Bodnarchuk, M.I.; Mahrt, R.F.; Kovalenko, M.; Stöferle, T.; *Nature*, **563**, 671-675, (2018)

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