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Cavity-induced cooperativity of a handful of molecules

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Over the past two decades, we have achieved a high degree of mastery in studying fundamental nano-optical interactions between single molecules and single photons. These include controlled coherent experiments in the near field, far-field demonstration of efficient extinction, various nonlinear measurements and single-molecule strong coupling in a microcavity. More recently, we have pursued projects, in which we aim to examine the cooperative coherent interaction of several well-controlled individual molecules via a common photonic mode. In this talk, I present results on two different platforms, involving an open Fabry-Perot microcavity and a chip-based integrated circuit.

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