

Dense Arrays: A Novel Quantum Tool

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The physics of cooperative atoms/radiators in regular 2D arrays is dominated by two properties: first, a strongly frequency-selective reflectivity and second, the ability to confine polariton modes cleanly on the surface. This makes such a system highly sensitive to and controllable by light fields. Applications of these systems include beam steering, quantum information processing, metrology, and nonlinear single-photon techniques. I will introduce the basic physics aspect of such a system and explain why it allows for counter-intuitive and sensitive effects, and then present some of the applications.