

# Quantum Optics and Application with Cooperative 2D Arrays

S F YELIN<sup>1</sup>

<sup>1</sup>*Physics Department, Harvard University, 17 Oxford St, Cambridge MA, USA. Contact Phone: +6174951383  
Contact Email: syelin@g.harvard.edu*

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 quantum information, metrology, and nonlinear single-photon techniques.