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## **【411】 Efficient frequency selective single photon antennas based on a bio-inspired nano-scale atomic ring design with 9-fold symmetry**

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Quantum emitters forming nanoscopic polygon shaped arrays possess sub-radiant states with an exciton lifetime growing exponentially with emitter number. Placing an extra resonant dipole as absorber at the ring center creates a highly efficient single photon antenna. Interestingly for exactly nine emitters in a nonagon, as it appears in a biological light harvesting complex LHC2, we find a distinct minimum for its most dark state decay rate and a maximum of the effective absorption cross section, surpassing that for a single absorptive emitter. The dark state has dominant center occupation facilitating efficient energy absorption and fast transport. The ring concentrates incoming radiation at the center and minimizes transport loss and time.

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