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Plasmonic Anti-Hermitian Coupling for Nano-Manipulation of Light ZILIANG YE, SHAUNG ZHANG, YUANG WANG, YONGSHIK PARK, GUY BARTAL, XIAOBO YIN, XIANG ZHANG, UC Berkeley — Open quantum systems consisting of coupled bound and continuum states have been studied in a variety of physical systems. In these systems, the effects of the continuum decay channels are accounted for by indirect anti-Hermitian couplings among the bound states. Here we propose a general scheme to control light in a nano-plasmonic system by utilizing the anti-Hermitian coupling between the individually designed resonances of each plasmonic element in the system. As a specific example, we experimentally show a realistic coupled plasmonic dipole antenna array with $\lambda/15$ separations, in which selective excitation of an individual antenna can be achieved by tuning the frequency of the incident light. Without the anti-Hermitian coupling, these antennas are indistinguishable from each other.

Ziliang Ye
UC Berkeley

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