

Dipole-Dipole Coupling Mediated by Lattice Resonances

Alejandro Manjavacas^{1,2,*}

¹Instituto de Óptica (IO-CSIC), Consejo Superior de Investigaciones Científicas, 28006 Madrid, Spain

²Department of Physics and Astronomy, University of New Mexico, Albuquerque, New Mexico 87106, United States

*corresponding author, E-mail: a.manjavacas@csic.es

Abstract

Ordered arrays of metallic nanostructures support collective modes known as lattice resonances, which give rise to very strong and spectrally narrow optical responses. Here, we show that, thanks to their collective nature, the lattice resonances of a periodic array of metallic nanoparticles can mediate an efficient long-range coupling between two dipole emitters placed near the array.