

Nanoplasmonic Renormalization and Enhancement of Coulomb Interactions

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We propose a general and powerful theory of the plasmonic enhancement of the many-body phenomena resulting in a closed expression for the surface plasmon-dressed Coulomb interaction. We illustrate this theory by computing dressed interaction explicitly for an important example of metal-dielectric nanoshells which exhibits a rich resonant behavior in magnitude and phase. This interaction is used to describe the nanoplasmonic-enhanced Förster energy transfer between nanocrystal quantum dots near a nanoshell.