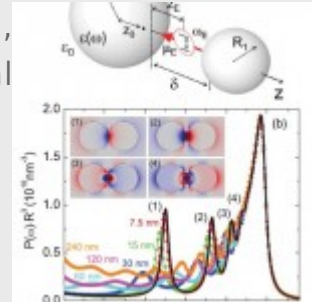


## Transformation Optics Approach to Plasmon-Exciton Strong Coupling in Nanocavities

Article: published in [Physical Review Letters](#) by [F. J. García-Vidal](#), and [A. I. Fernández-Domínguez](#), Department of Theoretical Condensed Matter Physics and IFIMAC researchers.



**W**e investigate the conditions yielding plasmon-exciton strong coupling at the single emitter level in the gap between two metal nanoparticles. Inspired by transformation optics ideas, a quasianalytical approach is developed that makes possible a thorough exploration of this hybrid system incorporating the full richness of its plasmonic spectrum. This allows us to reveal that by placing the emitter away from the cavity center, its coupling to multipolar dark modes of both even and odd parity increases remarkably. This way, reversible dynamics in the population of the quantum emitter takes place in feasible implementations of this archetypal nanocavity. [\[Full article\]](#)