

Abstract Submitted
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Surface enhanced quantum control of a two-level system¹ CHITRA RANGAN, SOMAYEH M.A. MIRZAEI, University of Windsor, ON, Canada — We demonstrate the enhanced purification of the quantum state of a two-level system subject to a near-resonant driving field when in proximity to a gold nanoparticle. The quantum dynamics of the driven two-level system in the presence of decay is modelled by the Lindblad Master equation. The electrodynamics of the gold nanoparticle illuminated by the driving field and the field radiated by the atomic dipole is solved using a finite-difference time-domain method. We discover that the presence of a proximate gold nanoparticle enhances the purity of a driven two-level system even at short times.

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