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Coupling between Plasmonic Nanostructures and Nitrogen-Vacancy Quantum Emitters NATHANIEL STEINSULTZ, JINXIAO GONG, MIN OUYANG, Center for Nanophysics and Advanced Materials, Department of Physics, University of Maryland, College Park, MD 20742 — In this talk, we will discuss the coupling between plasmonic nanostructures and nitrogen-vacancy (NV) center quantum emitters in diamonds at the nanoscale. We have developed a method to achieve tunable coupling between plasmonic metal nanostructures and NV centers. The effects of the metallic surface plasmon modes on the spontaneous emission rate of the NV centers can be evaluated by measuring the fluorescence lifetime of the NV centers. By coupling the NV center to the surface plasmon modes of the metallic nanoparticles, we observe an enhanced fluorescence rate of NV centers in nanodiamonds that may lead to increased sensitivity in nanoscale sensors.

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