

DAMOP13-2013-000927

Abstract for an Invited Paper  
for the DAMOP13 Meeting of  
the American Physical Society

### **Surface Enhanced Quantum Control**

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Miniaturization of quantum technologies have led to physics that require the marriage of atomic physics and nanomaterials science. Some of the resulting areas of research are hybrid quantum devices, single-molecule spectroscopies, table-top intense field generators, etc. I will present an area of research that I dub “Surface-enhanced quantum control” that is an exciting way of controlling light and nanomatter. By combining the electromagnetic enhancement properties of plasmonic nanomaterials with the modification of the atomic properties, we can achieve an unprecedented level of control over quantum dynamics. I will present examples of surface-enhanced state purification, in which quantum states near metal nanostructures can be rapidly purified by the application of a weak near-resonant control field.

<sup>1</sup>We gratefully acknowledge support from the NSERC Discovery Grant Program and the NSERC Strategic Network for Bioplasmonic Systems.