DAMOP20-2020-001136

Abstract for an Invited Paper
for the DAMOP20 Meeting of
the American Physical Society

Controlling spin-photon interfaces and nuclear spin registers in color centers

SOPHIA ECONOMOU, Virginia Tech

Color centers in solids are being developed as a central components of quantum communication networks. The centers studied for this application, such as the NV center in diamond, are optically active, provide spin-photon interfaces, and feature modest-sized nuclear spin registers that can be controlled through the electronic spin. Despite the enormous progress in both spin-photon entanglement and nuclear spin control, further improvements are needed for realistic applications. I will present our theoretical work toward this direction, focusing on the generation of multi-photon graph states and the control of nuclear spins through dynamical decoupling sequences.