Physics AT QUEENS COLLEGE

Colloquium Notice

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Near-field sensing of a topological metasurface via scanning color center microscopy

As the ability to control electromagnetic fields through engineered photonic structures grows, so does our need for field mapping techniques with subwavelength resolution. Here, we use a scanning diamond nanocrystal to investigate the interplay between the emission of room-temperature nitrogen-vacancy (NV) centers and a proximal topological waveguide. The NV photoluminescence serves as a local, spectrally broad light source to characterize the waveguide response, both in terms of its wavelength bandwidth as well as the correspondence between light injection site and directionality of wave propagation. Further, we find that near-field coupling between the emitters and the waveguide chiral modes influences the ellipticity of the NV photoluminescence, hence allowing us to reveal nanostructured light fields with a spatial resolution defined by the nanoparticle size. Our results pave the route to exploiting color centers as photonic sensors, an approach that also promises opportunities in the development of on-chip devices integrating single-photon emitters and quantum optics.

Monday
October 28, 2024
Starts at 12:15 PM
Coffee at 12:00 PM
Physics Conference Room, SB B326
This talk is accessible via **Zoom** or use
meeting ID 829 2687 2594 and **passcode 866995** to join