Physics & Astronomy Colloquium – Fall 2020

Tuesday, Oct 6th at 3:30 pm

(Zoom colloquia: Please find the meeting information below)

Dr. Chase T. Ellis

U.S. Naval Research Laboratory

Low-Loss Nanophotonics in the mid- and long-wave infrared

The high optical losses of metal-based plasmonic materials in the infrared have driven an extensive search for alternative lower-loss materials that can support plasmonic effects, such as sub-diffraction confinement of optical fields. One promising alternative employs polar-dielectric materials (e.g., SiC) that are capable of supporting phonon-mediated, collective oscillations of bound lattice charges (surface phonon polaritons), which result in low-loss, plasmonic-like, sub-diffractional excitations over the mid- to far-infrared spectral range. In addition to outlining the basic physics of surface phonon polariton resonances, I will also discuss our research group's latest advances in manipulating light at the nanoscale with low-loss polar dielectric materials (e.g., SiC and calcite). This work includes our efforts to actively tune resonances, further decrease losses by tailoring resonator interactions, and realize hyperbolic volume confined states within nanostructured calcite crystals.

Zoom meeting ID: 995 291 7599 Passcode: PHAS

(Find more information at Department Colloquia Webpage)