



PHYSICS COLLOQUIUM: Exciton Transport in Halide Perovskites and Topological Insulators

Dong Yu

Professor, Department of Physics & Astronomy
University of California, Davis

Date:

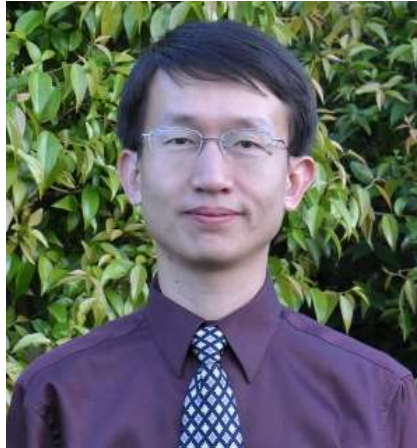
9/17/2021

Time:

10:30 AM-11:50 AM

Link:

Please contact
snsgradstaff@ucmerced.
edu for the zoom
information.



About The Speaker:

Dong Yu received his Ph.D. in physics in University of Chicago in 2005. He then worked as a postdoc in Harvard University. In 2008, he joined the Department of Physics and Astronomy in University of California at Davis as a faculty and stayed there since then. His research interest is mainly on optoelectronic properties of nanomaterials.

Abstract:

Excitons, electron-hole pairs bound by Coulomb interaction, are important quasi-particles that have profound effects on the optoelectronic properties of semiconductor materials. Excitons are often regarded as more localized than free carriers. In this talk, I will show that excitons can be significantly more mobile than free charge carriers in certain materials. Two case studies will be presented based on our recent experimental work using photocurrent imaging. The first is hybrid inorganic-organic lead halide perovskites, where the exciton scattering with optical phonons is suppressed compared to free charge carriers because of the dipolar nature of excitons. The second case is topological insulators. We observed millimeter-long transport of photogenerated carriers, which can be understood by superfluidic exciton condensation. Highly non-local excitons may find novel applications in energy harvesting and quantum computing.

For more information, contact : David Strubbe
dstrubbe@ucmerced.edu