

UNL Department of Physics and Astronomy & Nebraska Center for  
Materials and Nanoscience presents:

## Probing Fundamental Excitations in Solids with Light

PRESENTED BY  
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**THURSDAY**  
**FEBRUARY 6**  
**4:00 PM**  
**IN JH 136**

Refreshments will be  
served in the JH 1st  
Floor Vending Area at  
3:30

### ABSTRACT

Fundamental excitations (e.g. plasmons, excitons, phonons, and magnons) determine both the equilibrium and non-equilibrium properties of solids such as metals, semiconductors, and magnetic materials. Much information about these fundamental excitations can be learned from optical spectroscopy. In this talk, I will give a few examples (1) How phonon and magnon spectra can be used to quantify a spin current induced by a temperature gradient in a magnetic insulator; (2) how to control valley index in a semiconductor monolayer by coupling to a metasurface; and (3) how moire potential modifies excitons in a twisted bilayer of transition metal dichalcogenides.

### Bio

Xiaoqin Li received the Ph.D degree from University of Michigan in 2003. She is currently the professor in the Department of Physics at the University of Texas at Austin. She is the recipient of the NSF Career Award (2008), AFOSR Young Investigator Award (2008), ONR Young Investigator Award (2008), Sloan Research Fellowship (2008-2011), and the Presidential Early Career Award for Scientists and Engineers (PECASE) (2009). Her research interests include ultrafast nonlinear spectroscopy in condensed matter, quantum dynamics and control in nanostructures.