UCLA STROBE Seminar Series

Combining accelerator techniques with scientific imaging

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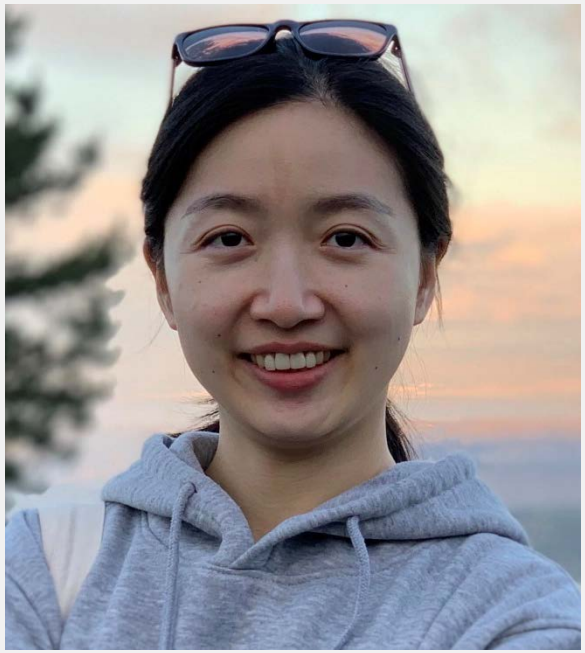

The goal of my research is to integrate high brightness beams from accelerators and free-electron lasers (FELs) with advanced imaging methods to enable scientific investigations. On one hand, high brightness beams, electrons or photons, serve as our eyes looking into the ultrafast dynamics on the atomic scales. The development of electron accelerators and x-ray FELs has greatly advanced our knowledge of ultrafast dynamics and atomic and molecular structures, by unraveling a whole realm of scientific investigation. Imaging methods, on the other hand, complement the high brightness beams to visualize what they can bring to our eyes for interpretation. The hurdles in imaging science also provide guidelines for the future direction of accelerator research. In this talk, I will discuss two projects that use accelerator techniques to facilitate scientific imaging. In the first project, we use laser shaping to implement ghost imaging with electrons, and in the second project, we use angular streaking to characterize attosecond x-ray pulses.

Siqi Li received her bachelor's degree from the University of Chicago in 2013, and her doctoral degree from Stanford University in 2019. Li's research focuses on using optical lasers to facilitate accelerators and x-ray free-electron lasers. Her work includes injector laser shaping, electron ghost imaging, and angular streaking for diagnosing attosecond x-ray pulses.

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