Seminar talk June 21st at 11 a.m., small Max-Born-Hall

Dr. Kenneth Beyerlein from Max Planck Institute for the Structure and Dynamics of Matter

"Imaging Non-equilibrium Dynamics in Two-Dimensional Materials"

Abstract:

The interfaces in thin film heterostructures dictate the performance of an electronic device. Understanding their behavior upon exposure to light is important for advancing photovoltaics and spintronics. However, producing an atomic image of these dynamics is an under-determined problem without a unique solution. In this talk, I will show how a set of ultrafast soft X-ray diffraction rocking curves can be spliced together to add constraints to the phase retrieval problem. In doing so, the anti-ferromagnetic order through a $NdNiO_3$ film after illumination of the substrate with a mid-Infrared laser pulse will be imaged. Notably, a disordered phase front initiated at the substrate interface is shown to evolve at twice the speed of sound. This time-spliced imaging technique opens a new window into the correlated dynamics of two-dimensional materials.