

**Speaker: Dr. Nathan Keim**

**Time: 11:00am-12:00pm**

**Location: Whitaker Biomedical Engineering 1103**

**Title: Memories in Disordered Soft Matter**

**Abstract:** While we are all familiar with retaining information in a computer or our minds, memory is an essential quality of many more systems around us. I will present two materials that “learn” how they are deformed in experiments: a dilute suspension of particles in liquid, and a solid made of jammed particles. These exemplify two different but generic ways that non-equilibrium systems can form memories. Exploring memory teaches us something new about each material, and how its disordered internal states can be prepared, probed, and put to use. I touch briefly on the equally fascinating comparisons with memories in other systems—natural and artificial, living and nonliving—that inspire new directions for research and design.

**Bio:** Nathan Keim attended Haverford College, received his Ph.D. in physics from the University of Chicago, and was a postdoctoral researcher in mechanical engineering and the MRSEC at the University of Pennsylvania. After beginning his faculty career at Cal Poly San Luis Obispo, he moved to Penn State in 2020. His lab uses experiments and modeling to study memory and other non-equilibrium behaviors of deformed soft matter, including amorphous solids, liquid contact lines, and crumpled sheets.