

Thursday, March 16<sup>th</sup>, 2023

Refreshments at 3:15pm in PSF 186  
Colloquium from 3:30 PM – 4:30 PM in PSF 101

## **Floquet engineering correlated materials with polarization as a tuning parameter**

Professor Rebecca Flint

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### Abstract:

Floquet engineering is a potentially powerful tool where driving a material with periodic light can tune the Hamiltonian and induce novel interactions and phases of matter. Traditionally, the light is monochromatic, and the amplitude, frequency and polarization can be varied tune an effective Hamiltonian of the driven material. Unfortunately, polarization generically breaks symmetries, which may be undesirable. I will introduce Floquet engineering and show how unpolarized light can also theoretically be used for Floquet engineering to modify correlated materials while preserving the original symmetries. I will discuss two examples: how insulating magnetic materials on a triangular lattice could potentially be driven into two different spin liquids; and how multiple Kondo channels can be induced in metallic materials with either single magnetic impurities, or a lattice of magnetic impurities.

### Biography:

Rebecca Flint is an associate professor in the Department of Physics at Iowa State University, and a scientist at the Ames National Laboratory. She is a theoretical condensed matter physicist studying correlated electronic materials. She earned her B.S. from Caltech in 2004 and her Ph.D. in Physics from Rutgers University in 2010 before doing a Simons Postdoctoral Fellowship at MIT and arriving at Iowa State in 2013. In 2015, she received a DOE Early Career Award to study praseodymium based heavy fermion materials, and an NSF CAREER to study exotic magnetic materials.

Host: Prof. Onur Erten

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