



**Speaker:** Theo Johnson-Freyd  
Northwestern University

Tuesday, March 3, 2015  
11:00 AM  
213 DeBartolo Hall

**Title:** Twisted field theories and higher-categorical (op)lax transforms

**Abstract:**

A "Schrodinger picture" (extended) quantum field theory is a functor from some (higher) category of "spacetimes" to some (higher) category of "Hilbert spaces". This framework is powerful and well-studied. Unfortunately, it does not capture many important examples. Instead, most interesting quantum field theories are best described as "morphisms" of some sort between functors from the category of spacetimes --- these are called "twisted" or "relative" or "Heisenberg picture" quantum field theories. The most natural notion of "morphisms of functors" is "natural transformation." Unfortunately, plain (i.e. "strong") natural transformations still fail to accommodate most examples. Instead, what is needed are "lax" or "oplax" natural transformations. In this talk, based on joint work with Claudia Scheimbauer, I will describe the definition of "(op)lax natural transformation" between functors of higher categories, and discuss qualitative differences between "lax" !