Mathematics, Statistics, and Computer Science **@ UIC**

Analysis and Applied Mathematics Seminar

Topological Anderson insulator by mathematical homogenization

Thuyen Dang (University of Chicago)

Abstract: Topological insulators are materials that are insulating on the inside but are (electrically) conductive on their surface or edge. The conducting states are protected: in the presence of a defect, the transport on the edge is barely affected. This edge behavior is characterized by topological invariants of its quantization. It is known in the physics community that topological Anderson insulators (TAI) can be created by applying a disorder potential to the matter. The potential generates the phase transition of the matter that opens a spectral gap, which is the hallmark of topological insulators. In two dimensional, the TAI model can be recast as a Dirac equation. In this talk, we will discuss the formation of TAI from a mathematical homogenization point of view, and the connection between the microscopic and macroscopic Dirac operators. This is a joint work with Guillaume Bal.

Monday, November 27 at 4:00 PM in 636 SEO