

WABASH EXTRAMURAL MODERN ANALYSIS SEMINAR

February 27

2:00 p.m.

at

Wabash College

in rooms 114 and 118 Baxter Hall

*Times given are Eastern Time,
which is currently local time for Central Indiana and Ohio.*

- 2:00–2:30** *Refreshments and conversation*
- 2:30–3:30** **Rank one perturbations and Anderson models**
CONSTANZE LIAW, Baylor University
- 3:30–4:00** *More refreshments and conversation*
- 4:00–5:00** **Discrete groups and equivariant index**
YANLI SONG, University of Toronto
- 5:00–...** *Refreshments and farewells*

The purpose of Wabash Seminar talks is to present surveys of interest to all analysts, including graduate students and scholars working in areas far from the speaker's specialty. Come and meet your fellow analysts, learn what's going on, and spread the word.

Next Meeting: April 16

For further information call

Marius Dadarlat, Purdue University, (765) 494-1940

E-mail: mdd@math.purdue.edu

Web: <http://www.math.purdue.edu/~mdd/Wabash/>

Rank one perturbations and Anderson models

CONSTANZE LIAW

We consider two perturbation problems of very different type: (1) For rank one perturbations, we simply add to a fixed operator a vector projection onto a one dimensional subspace. Though falling into a restricted category of classical perturbation theory, important questions about the spectrum of the perturbed operator remain open. (2) Presenting a generalization of the discrete random Schroedinger operator, Anderson models contain a probabilistic component which causes the perturbation to be a non-compact operator (almost surely). As a result, none of classical perturbation theory applies here.

We present several links between these two perturbation problems. Some connections are identified as viable candidates to solve a long-standing conjecture (Anderson Localization Conjecture) about the spectral properties of Anderson models.

Discrete groups and equivariant index

YANLI SONG

Consider a manifold M together with a free action of a discrete group. The famous Atiyahs L^2 -index theorem gives a formula to calculate its higher index for the discrete group. In this talk, we assume there is an action of a compact Lie group K in addition to the discrete group action. We show that if the discrete group action and compact Lie group action are admissible in a suitable sense, then any elliptic differential operator on M is Fredholm after restricting to isotypic K -components. In this case, the differential operator has an equivariant index, which is an infinite sum of irreducible K -representations. In this talk, I will explain some properties of the equivariant index.