WABASH
EXTRAMURAL MODERN ANALYSIS
SEMINAR

October 28, 2017

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	**Perron-Frobenius operators, infinite ergodic theory and new dynamical properties of the Farey map** ***Byron Heersink, Ohio State University***
3:30–4:00	***More refreshments and conversation***
4:00–5:00	**MF traces and Crossed Products** ***Christopher Schafhauser, University of Waterloo***
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.

$\boxed{\text{Next Meeting: TBA}}$

For further information call

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Perron-Frobenius operators, infinite ergodic theory and new dynamical properties of the Farey map

Byron Heersink

In this talk, we establish properties of the Farey map F through the analysis of the Perron-Frobenius operators of F and Gauss map G, well known maps of the unit interval relating to continued fractions. First, we provide effective asymptotic results for the equidistribution of the preimages $F^{-n}([\alpha, \beta])$ with $[\alpha, \beta] \subseteq (0, 1]$. To do so, we carefully utilize certain properties of the Perron-Frobenius operator of F together with some underlying results in infinite ergodic theory, notably applying Freud's effective version of Karamata's Tauberian theorem. Secondly, we establish an equidistribution result for the periodic points of F. Given that G is a speedup of F, we follow the work of Pollicott and utilize the Fredholm determinants of the Perron-Frobenius operator of G to construct approximate Laplace transforms of sums of particular functions over the periodic points. This allows us to establish the equidistribution result from the spectral behavior of the operator..

MF traces and Crossed Products

Christopher Schafhauser

A tracial state on a C*-algebra A is called *matricial field* (MF) if there is a net of self-adjoint, linear, finite rank maps φ_n on A which approximately preserve the multiplication and approximately preserve the trace. To date, there is no known example of a trace which is not MF. We will discuss this class of traces and some recent new examples MF traces on C*-algebras.

Given an action of a discrete group G on a C*-algebras A, any G-invariant trace on A extends canonically to a trace on the reduced crossed product C*-algebra $A \rtimes_r G$. We consider the question of when traces of this from on $A \rtimes_r G$ are MF. In the case where A is nuclear and G is free, classification results can be used to show that this is often the case. For example, this holds for many AH-algebras, a class of direct limit algebras constructed from matrices over $C(X)$. Moreover, when G is free, the action is minimal, and A is separable, nuclear, and satisfies the Universal Coefficient Theorem, all traces on $A \rtimes_r G$ are MF.

This talk is partly based on joint work with Timothy Rainone.