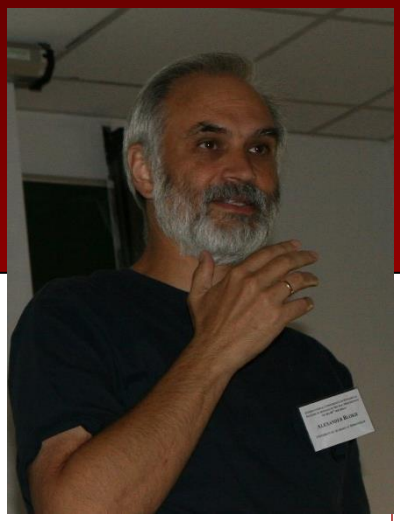

Department of Mathematical Sciences welcomes

Alexander Blokh
University of Alabama at Birmingham

Renormalization towers and their forcing

ABSTRACT:

From the standpoint of the theory of dynamical systems, the simplest type of limit behavior of a trajectory under iterates of a continuous map is periodic. Thus, cycles (periodic orbits) play an important role in dynamics. The description of possible sets of types of cycles of maps from a certain class is a natural and appealing problem.

For interval maps, if by "type" we mean the period, this problem has been solved by A. N. Sharkovsky in 1964. If by "type" we mean the permutation, then the situation is so complicated that any reasonable description is impossible. We propose a new kind of a "type", namely renormalization towers. They record how a cycle can be partitioned into blocks (of consecutive points) that are permuted by the map. This refines the notion of the period, but is still manageable. Moreover, often it is connected with the global renormalization structure of the map. We give the full description of possible sets of renormalization towers for continuous interval maps.

December 7, 2018

Hosted by:
Prof. Michal Misiurewicz

Tea begins at 2:30
in LD 259

Research Topic
begins at 3:00
in LD 229

ABOUT THE SPEAKER:

The speaker grew up in the city of Kharkiv, Ukraine. He got his master's from Kharkiv State University in 1980 and his doctorate from Voronezh State University in 1985. His thesis concerned interval maps and contained the decomposition of their non-wandering set into basic sets, solenoidal sets (a.k.a. infinite adding machine), and maximal by inclusion cycles, plus a few corollaries, such as the density of invariant measures living on individual cycles, in all ergodic invariant measures. After 10 years of working as a programmer in Moscow, in 1991 he moved to Middletown, CT, and then in 1992 down to Birmingham, AL, where he joined University of Alabama at Birmingham (UAB) faculty and where he resides now. Besides mathematics, he enjoys playing with his grandson and singing when nobody can hear.

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