

LOGIC SEMINAR
Fall 2010

Previous seminars at: http://home.gwu.edu/~harizanv/index.html#GW_Logic_Seminar_

Campus map

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Wednesday, December 15, 2010

5:15–6:15 p.m.

Speaker: Valentina Harizanov, GWU

Place: Phillips Hall (801 22nd Street), Room 414B

Title: *Computationally Enumerable Structures*

Abstract: We investigate computable equivalence structures, as well as computably enumerable (c.e.) and co-computably enumerable (co-c.e.) equivalence structures. While any c.e. equivalence structure with infinitely many infinite classes is isomorphic to a computable structure, there are c.e. equivalence structures that are not isomorphic to computable ones. If c.e. equivalence structures A and B are isomorphic to a computable structure that is relatively limit computably categorical, then A and B are limit computably isomorphic. On the other hand, for every computable relatively limit computably categorical equivalence structure that is not computably categorical, we construct an isomorphic co-c.e. structure that is not limit computably isomorphic to any computable structure. This is joint work with D. Cenzer and J. Remmel.

Wednesday, December 8, 2010

5:15–6:15 p.m.

Speaker: Joe Mourad, Georgetown University

Place: Phillips Hall (801 22nd Street), Room 414B

Title: *Tree Arguments and the Lattice of Recursively Enumerable Sets*

Abstract: The rubric of trees is most commonly appealed to when proving theorems about Turing degrees, yet trees can also be useful when considering constructions on recursively enumerable (r.e.) sets. In this talk I will investigate the use of two-dimensional trees in such constructions. A simple example which serves as a model for more complex arguments is the Freidberg Splitting Theorem which states that any nonrecursive r.e. set can be split into two non recursive r.e. sets. The construction is exceedingly simple yet a more detailed analysis which I will explore in this talk reveals some hidden structure the analysis of which can prove useful in understanding the deeper results.

Friday, November 19, 2010

4:45–5:45 p.m.

Speaker: Russell Miller, City University of New York

<http://qcpages.qc.cuny.edu/~rmiller/>

Place: MPA (805 21st Street), Room 305

Title: *Algebraic Fields and Computable Categoricity*

Abstract: The question of computable categoricity for fields has long been open and has been widely studied, with very limited success. We will discuss recent work with Shlapentokh which produced a criterion equivalent to computable categoricity for algebraic fields with splitting algorithms. This work also suggested a notion of computable presentability for the automorphism group of a computable structure. Other recent work, with Hirschfeldt, Kramer, and Shlapentokh, extended this to a criterion for relative computable categoricity for all computable algebraic fields, but also led to the construction of a computable algebraic field which is computably categorical but not relatively computably categorical. Time permitting, we will explain how all these constructions work.

Wednesday, November 10, 2010

5:15–6:15 p.m.

Speaker: Joe Mourad, Georgetown University

Place: Phillips Hall (801 22nd Street), Room 414B

Title: *Effective Two-Dimensional Generalization of König's Lemma*

Abstract: König's lemma states any infinite finitely bounded tree has an infinite path. We will investigate effective versions of this lemma for 2-dimensional trees.

Wednesday, November 3, 2010

5:15–6:15 p.m.

Speaker: Joe Mourad, Georgetown University

Place: Phillips Hall (801 22nd Street), Room 414B

Title: *Two-Dimensional Generalization of König's Lemma*

Abstract: König's lemma states any infinite finitely bounded tree has an infinite path. A version of this lemma for 2-dimensional trees will be presented. In addition effective versions of this generalization will be investigated.

Logic-Topology Seminar

Wednesday, October 20, 2010

5:15–6:15 p.m.

Speaker: Jozef Przytycki, GWU

<http://home.gwu.edu/~przytyck/>

Place: Phillips Hall (801 22nd Street), Room 414B

Title: *Homology of Distributive Structures: from Boolean Algebras to Spectral Sequences*

Abstract: While homology theory of associative structures, such as groups and rings, has been extensively studied in the past beginning with the work of Hopf, Eilenberg, and Hochschild, the non-associative structures, such as quandles, were neglected until recently. The distributive structures have been studied for a long time and even C.S. Peirce in 1880 emphasized the importance of (right) self-distributivity in algebraic structures. However, homology for such universal algebras was introduced only fifteen years ago by Fenn, Rourke and Sanderson. I will develop this theory in the historical context and describe relations to topology and similarity with some structures in logic.

Wednesday, October 13, 2010

5:15–6:15 p.m.

Speaker: Vincent Guingona, University of Maryland

<http://www-users.math.umd.edu/~vincentg/>

Place: Phillips Hall (801 22nd Street), Room 414B

Title: *Compression Schemes and Uniform Definability of Types over Finite Sets, Part II*

Abstract: We exhibit recent advances in the study of uniform definability of types over finite sets and show how it relates to data compression.

Wednesday, October 6, 2010

5:15–6:15 p.m.

Speaker: Vincent Guingona, University of Maryland

<http://www-users.math.umd.edu/~vincentg/>

Place: Phillips Hall (801 22nd Street), Room 414B

Title: *Compression Schemes and Uniform Definability of Types over Finite Sets, Part I*

Abstract: We discuss the notion of compression schemes and examine related combinatorial properties. We explore the connections between these computer scientific notions and model theory, mainly to a property called uniform definability of types over finite sets (UDTFS). Finally, we exhibit recent advances in the study of UDTFS and show how it relates to data compression.