۹۵/۱۰/۲ *Definable (p,q) Theorem*

محسن خانی
پژوهشگاه دانشهای بنیادی

Abstract

Assumig that $p \geq q$ are integers, according to the combinatorial (p,q) theorem, there exists a natural number $N(p,q)$ for which the following holds: For each pair (X,S), with S a collection of subsets of the set X, if $vc^*(S) < q$, and q sets among each p sets in S have non-empty intersection, then there exists a subset of X of size $N(p,q)$ that intersects each set in S. By vc^* we mean the Vapnilk-Chervonenkis dimension. The aim is presenting a definable version of this theorem, in which, as one may expect, S will be a collection of subsets of a model M defined uniformly with a formula $\phi(x,y)$. Having (p,q) property, that is knowing that from each p sets in S, q of them have non-empty intersection, will be equivalent to certain instances $\phi(x,b)$ of ϕ dividing over M. We will prove a special case of the following conjecture, which we will justify to be the suitable definable version of the (p,q) theorem. Assume that T is a nip theory in a countable language, M is a countable model, $\phi(x,y)$ is a formula, and $q \in S_y(M)$. If for all $b \models q$, the formula $\phi(x,b)$ does not divide over M, then there exists $a \in \mathbb{M}$, the monster model, such that $\phi(a,y)$ lies in each global coheir $\tilde{q}$ of q.

۱۶ و ۹۵/۱۰/۲۳ *Projective Fraisse Limit and its Applications*

حامد خلیلیان
دانشگاه تربیت مدرس

Abstract

In these talks we will talk about projective dual version of Fraisse limit theorem that was proved by Solecki and Irwin. Also by using this method we will construct Pseudo arc and Lelek fan as examples and via projective homogeneity property of Fraisse projective limit, we will give a new characterization of the Pseudo-arc. If time permit by using dual version of Ramsey theorem we will compute universal minimal flow of homeomorphism group of Lelek fan that was done by D.Bartosova and A.Kwiatkowska.

۱۰/۳۰ و ۹۵/۱۱/۷ *Generic Structures Without the algebraic Closure Property*

علی ولی زاده
دانشگاه صنعتی امیرکبیر

Abstract

The models obtained from Hrushovski constructions, from a view point, can be divided to two major categories; models with and without the algebraic closure property. The algebraic closure property (AC) concerns the interrelation among the algebraic closure and the geometric closure in this models. Generally, if the geometric closure is included in or is equal to the algebraic closure, the structure can be considered as somewhat tame; as this structures are usually stable. But the theory of a structure in which the geometric closure enlarges beyond the algebraic closure can be essentially undecidable and possess the strict order property (SOP); properties that propose us to call these kind of structures wild. In this talk we consider a class of non-AC generic structures and provide theorems witnessing the wild aspect of their model theory, but in an opposite direction we also prove a theorem showing that these structures possess a level of tameness. I will try to provide proofs in detail.

۱۴ و ۹۵/۱۱/۲۱ *On a problem of Gowers: Does an explicitly defined Banach space contain l_p or c_0*

کریم خانکی
دانشگاه صنعتی اراک

Abstract

Using Shelah stability theory we give a positive answer to a problem in Banach space theory due to T. Gowers. A famous conjecture in Banach space theory had predicted that every Banach space contains at least one of the classical spaces c_0 or l_p for some $1 \leq p < \infty$. All the Banach spaces known until 1974 were normal and this conjecture was confirmed. Tsirelson s example was the first space not containing isomorphic copies any of the classical sequence spaces, and the first space whose norm was defined implicitly rather than explicitly. This phenomenon, i.e. implicit definability, later played an important role in Banach space theory when new spaces with implicitly defined norms yielded solutions to many of the most long standing problems in the theory. Given than all new spaces whose norms were implicitly defined do not contain any of the classical sequences, some Banach space theorists, such as Gowers and Odell, asked the following question: Must an explicitly defined Banach space contain l_p or c_0? In this paper we provide a positive answer to this question.

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