SEMINARIUM Z TEORII MNOGOŚCI I TOPOLOGII

Zaproszenie

Serdecznie zapraszamy na obchody

**Jubileuszu dwóchsetnego spotkania
Seminarium z Teorii Mnogości i Topologii,**

14 grudnia 2023 o godzinie 16:00, sala 553
w Katedrze Matematyki Uniwersytetu Jana Kochanowskiego w Kielcach.

prof. Taras Banakh
dr Joanna Garbulińska-Węgrzyn
dr Magdalena Nowak

Organizatorzy seminarium

Program

16:00-17:00	Wiesław Kubiś, *A survey of generic structures*
17:05-17:45	Filip Strobin, *Rate of convergence in deterministic version of the ,,chaos game'' algorithm*
17:50-18:30	Jarosław Swaczyna, *Extremely slow minimal dynamical systems*

Abstrakty

A survey of generic structures
Wiesław Kubiś
(Czeska Akademia Nauk, Uniwersytet Kardynała Stefana Wyszyńskiego)

We will survey both classical and recent developments of generic mathematical structures, characterized uniquely either by a winning strategy in a natural infinite game, or by a special variant of injectivity. Various examples come from model theory, combinatorics, algebra, geometry, and topology.

Rate of convergence in deterministic version of the „chaos game" algorithm

Filip Strobin
(Politechnika Łódzka)

The validity of the classical „chaos game" algorithm of generating images of attractors of iterated mapping systems, can be explained by the fact that with probability 1, the randomly chosen sequence of a finite alphabet are disjunctive, i.e. they contain all finite words in a given alphabet as their subwords. In particular, given a (defined earlier) disjunctive sequence, we are sure that the generated orbit will approximate the attractor. During the talk, I will show that additional properties of disjunctive sequences give some control of the rate of convergence of the generated orbit towards the attractor. I will also show that typical (in the sense of Baire's category and even porosity) disjunctive sequence do not provide any control over the rate of convergence.

The presented results were obtained together with Krzysztof Leśniak and Nina Snigireva, and come from the papers:

- K. Leśniak, N. Snigireva, F. Strobin, *Topological prevalence of variable speed of convergence in the deterministic chaos game*, submitted
- K. Leśniak, N. Snigireva, F. Strobin, *Rate of convergence in the disjunctive chaos game algorithm*, Chaos 32 (2022), no. 1, Paper No. 013110

Extremely slow minimal dynamical systems

Jarosław Swaczyna
(Politechnika Łódzka)

It is known that if real function defined on some interval has derivative zero everywhere, then it is constant. However, if we allow the domain of the considered function to be the Cantor set, situation is completely different. During my talk I will present results of K. Ciesielski and K. Jasiński about existence of autohomeomorpshism of the certain Cantor set with derivative zero everywhere, as well as results of K. Ciesielski and myself about possible Hausdorff dimensions of the Cantor set, on which such funtion is defined. The talk will be based on:

- K. Ciesielski, J. Jasinski, *An auto-homeomorphism of a Cantor set with derivative zero everywhere*, J. Math. Anal. Appl. 434 (2016) 1267–1280
- K. Ciesielski, *Monsters in Calculus*, The American Mathematical Monthly, 125:8, 739-74
- K. Ciesielski, J Swaczyna, *Hausdorff dimension of extremely slow minimal dynamical systems and Holder preserving differentiable extensions*, preprint.