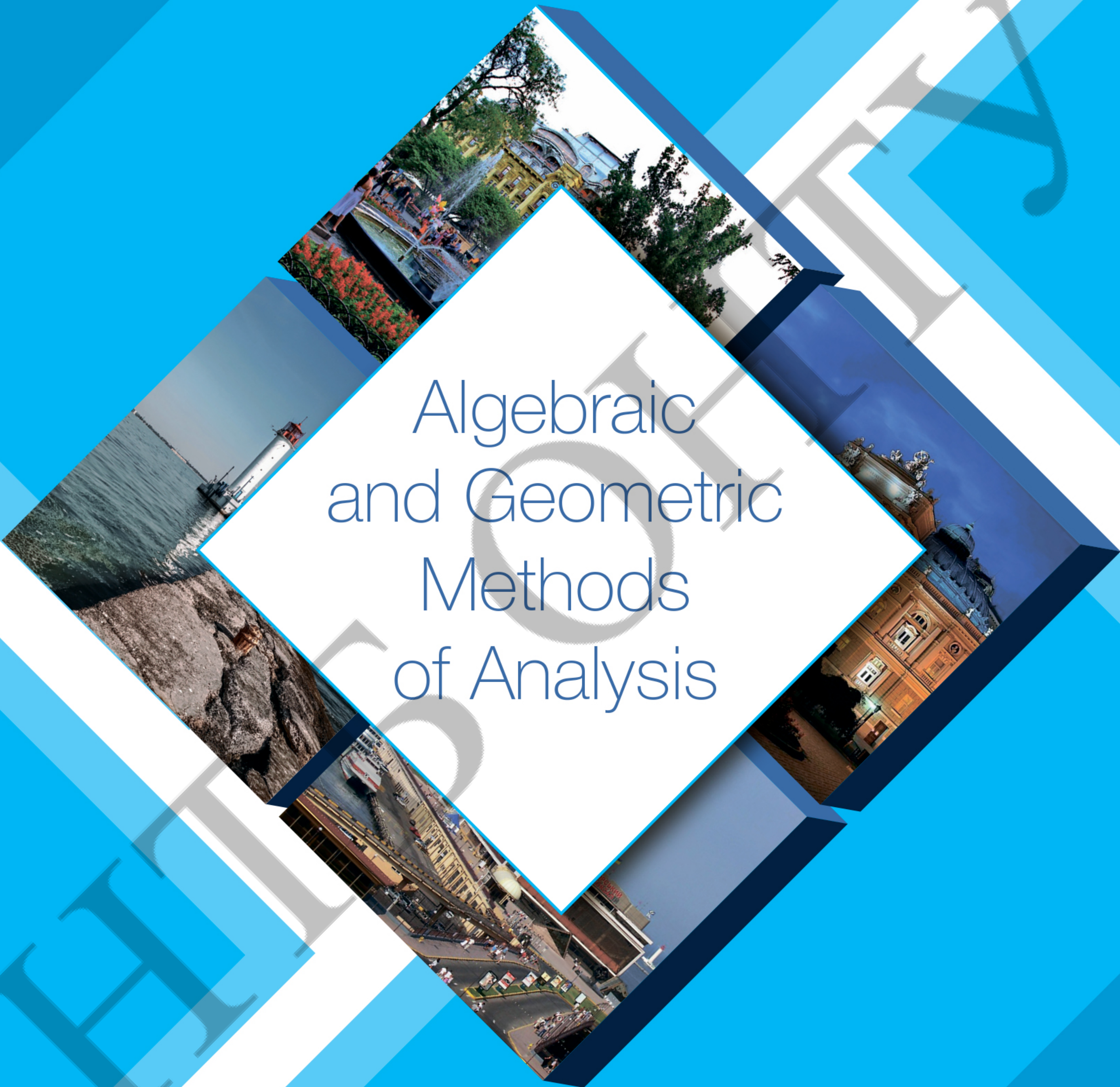
International
Scientific Conference



Algebraic and Geometric Methods of Analysis

27-30 May 2024
Odesa, Ukraine

The purpose of this conference is to bring together researchers in geometry, topology, algebra, analysis and dynamical systems and to provide for them a forum to present their recent work to colleagues from different nationalities. This way we aim to stimulate discussion about the latest findings in geometrical and topological methods in analysis and to increase international collaboration.

The conference continues the traditional annual conference «Geometry in Odesa» holding from 2004, and hosted by Odesa National University of Technology (Odesa National Academy of Food Technologies till 2021). From 2017 the conference was renamed to «Algebraic and geometric methods of analysis» (AGMA).

The Conference languages: Ukrainian and English.

List of topics

- Algebraic methods in geometry
- Differential geometry in the large
- Geometry and topology of differentiable manifolds
- General and algebraic topology
- Dynamical systems and their applications
- Geometric and topological methods in natural sciences
- Geometric problems in mathematical analysis

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Algebraic periods of surface homeomorphisms

Łukasz P. Michalak
(Institute of Mathematics, Physics and Mechanics, Ljubljana, Slovenia;
Adam Mickiewicz University, Poznań, Poland)
E-mail: lukasz.michalak@amu.edu.pl

A self-map $f\colon M \to M$ of a compact manifold determines the sequence $\{L(f^n)\}$, $n \geq 1$, of the Lefschetz numbers of its iterations. We consider its dual sequence $\{a_n(f)\}_{n=1}^{\infty}$ given by the Möbius inversion formula. The set $\mathcal{AP}(f) = \{n : a_n(f) \neq 0\}$ is called the set of algebraic periods of f. During the talk we describe finite sets of algebraic periods of homeomorphisms of an orientable surface, especially of Morse–Smale diffeomorphisms.

The talk is based on the joint project with G. Graff, W. Marzantowicz and A. Myszkowski.

Wigner-Ville distribution associated with quadratic Clifford-Fourier transform

Hakim Monaim
(Moulay Ismail University, Meknes. Morocco)
E-mail: monaim.hakim@edu.umi.ac.ma

This presentation provides the general double-sided orthogonal 2n-1-dimensional spaces split quadratic phase Clifford-Fourier transform and the general Wigner-Ville Distribution quadratic phase Clifford-Fourier transform. It proves the Rènyi and Shannon entropy and Lieb's uncertainty principles.

Keywords: Clifford Algebra; Orthogonal 2D-Planes Split; Clifford-Fourier Transform; Quadratic Phase Clifford-Fourier Transform; Wigner-Ville dDistribution Quadratic Phase Clifford-Fourier Transform.

References

[1] Hitzer, E. (2023). Quadratic Phase Quaternion Domain Fourier Transform. In Computer Graphics International Conference, pages 262-273. Springer.
[2] Lounesto, P. (2001). Clifford Algebras and Spinors. London Mathematical Society Lecture Note Series. Cambridge University Press, 2 edition.
[3] Castro, L., Haque, M., Murshed, M., Saitoh, S., and Tuan, N. (2014). Quadratic fourier transforms. Annals of Functional Analysis, 5(1):10-23.

Non-simple strongly nilpotent distribution germs

Piotr Mormul
(Banach str. 2, 02-097 Warsaw, Poland)
E-mail: mormul@mimuw.edu.pl

All known to-date Goursat structures featuring moduli of the local classification appear not to be strongly nilpotent. That is, not being equivalent to their nilpotent approximations. In the course of obtaining more and more (if disparate) confirmations of that statement, like in [1] and [2], a natural problem in the nonholonomic analysis has been gradually imposing by itself: to find a concrete unimodal family of strongly nilpotent completely nonholonomic distributions. The search for such an example seems by now hopeless in the realm of Goursat structures *per se*. Yet, by a