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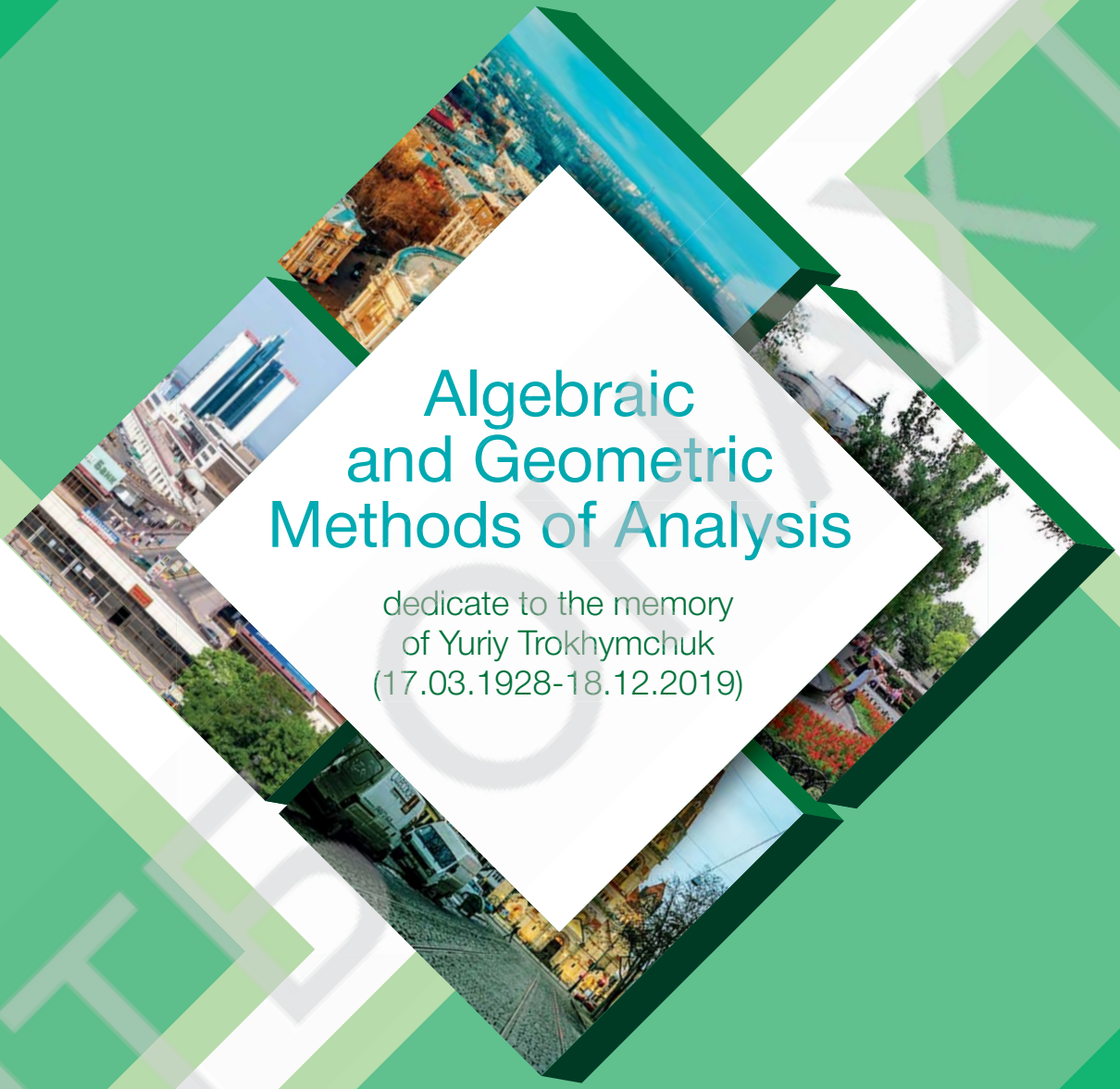

Algebraic and Geometric Methods of Analysis

dedicate to the memory
of Yuriy Trokhymchuk
(17.03.1928-18.12.2019)

May 25-28, 2021
Odesa, Ukraine

НТБ ОНМАКТ

List of topics

- Topological methods in analysis
- Geometric problems of complex and mathematical analysis
- Algebraic methods in geometry
- Differential geometry in the whole
- Geometry and topology of differentiable manifolds
- General and algebraic topology
- Geometric and topological methods in natural sciences

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The Golomb and Kirch topologies on the set of nonzero integers

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The *Golomb* (resp. *Kirch*) topology on $\mathbb{Z}$ is generated by the subbase consisting of arithmetic progressions $a + b\mathbb{Z}$ where $a \in \mathbb{Z}$ and b is a (square-free) number, coprime with a. It is known that the Golomb (Kirch) topology on the subspace $\mathbb{Z}^\bullet = \mathbb{Z} \setminus \{0\}$ of non-zero integers is Hausdorff and (locally) connected. In the talk we shall discuss the homeomorphisms of the Golomb and Kirch topologies on $\mathbb{Z}^\bullet$ and $\mathbb{N}$.

Theorem 1 (Banakh, Spirito, Turek). *The space $\mathbb{N}$ with the Golomb topology has a unique self-homeomorphism.*

Theorem 2 (Banakh, Stelmakh, Turek). *The space $\mathbb{N}$ with the Kirch topology has a unique self-homeomorphism.*

Theorem 3 (Spirito). *The space $\mathbb{Z}^\bullet$ with the Golomb topology has exactly two self-homeomorphisms.*

Theorem 4 (Stelmakh). *The space $\mathbb{Z}^\bullet$ with the Kirch topology has exactly two self-homeomorphisms.*

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