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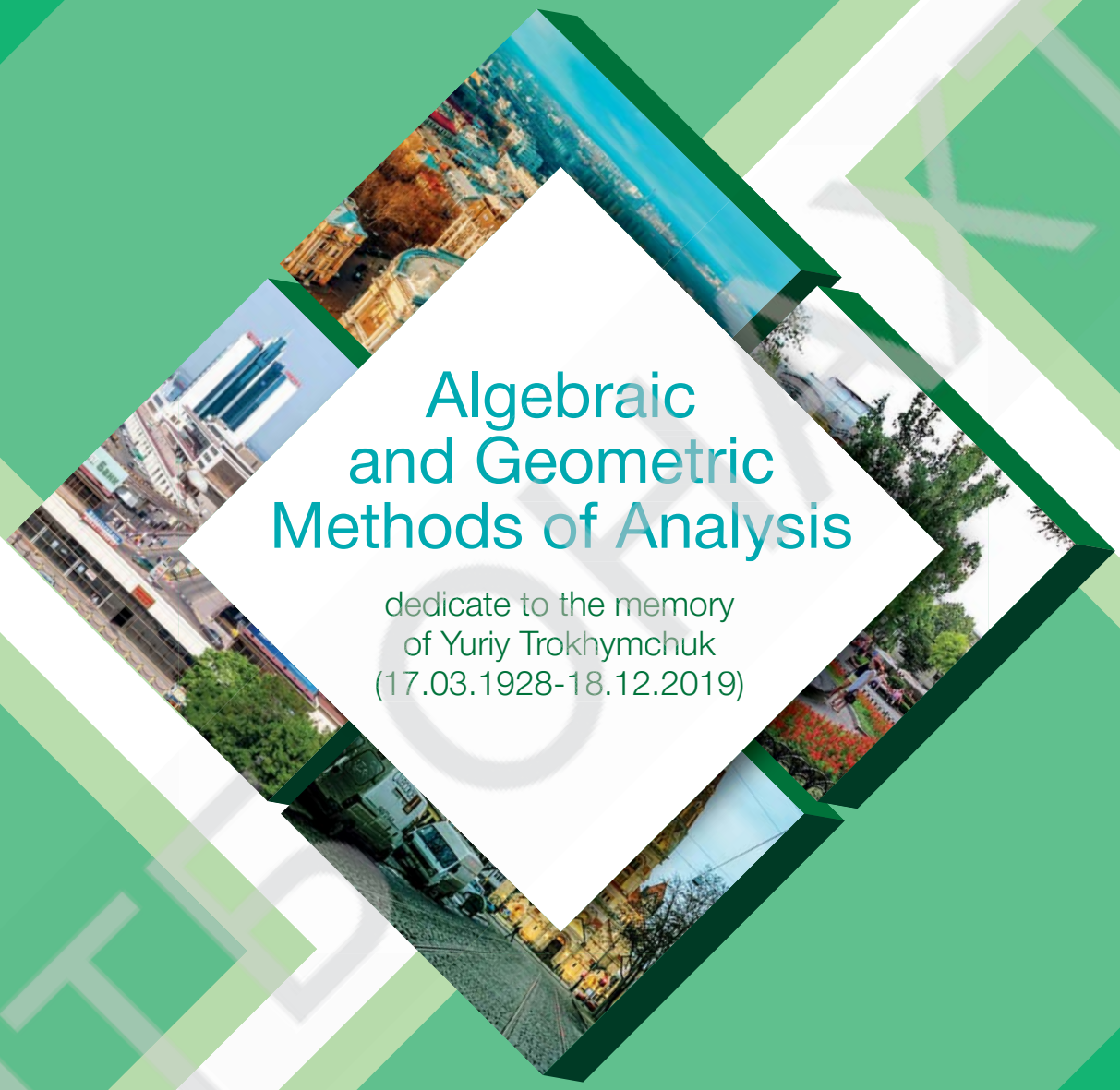

Algebraic and Geometric Methods of Analysis

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

May 25-28, 2021
Odesa, Ukraine

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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Twistor spaces on foliated manifolds

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Let M^{2n} be an even-dimensional Riemannian manifold, the twistor space $Z(M)$ is the parametrizing space for compatible almost complex structures on M. It is a bundle over M, with fiber $SO(2n)/U(n)$ and is equipped with two almost complex structures $J^{\pm}$, where J^{+} can be integrable but J^{-} is never integrable, however, it still is important as will be discussed. Moreover, in the case where J^{+} is integrable, it is shown in [1] that M has particular properties, especially when $n = 2$, which is an interesting case in physics, since the holomorphic structure of the twistor space correspond to a conformal structure of M. This correspondence is called the Penrose correspondence.

This talk is based on a joint work with R. A. Wolak [2] , in which, the theory of twistors on foliated manifolds is developed. We construct the twistor space of the normal bundle of a foliation. It is demonstrated that the classical constructions of the twistor theory lead to foliated objects and permit to formulate and prove foliated versions of some well-known results on holomorphic mappings. Since any orbifold can be understood as the leaf space of a suitably defined Riemannian foliation we obtain orbifold versions of the classical results as a simple consequence of the results on foliated mappings.

References

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[2] Rouzbeh Mohseni, Robert A. Wolak. Twistor spaces on foliated manifolds. arXiv:2009.10491

Kh. F. Kholturayev *Perfect metrizability of the functor of idempotent measures* **75**

Y. Khomych *Quasiareal deformation of surfaces of positive Gauss curvature* **77**

V. Kiosak, O. Lesechko *Canonical infinitesimal deformations of metrics of pseudo-Riemannian spaces* **78**

R. Salimov, B. Klishchuk *On the behavior at infinity of ring Q-homeomorphisms* **79**

T. Kolomiiets, A. Pogorui *Elements of probability theory and measures with values in hypercomplex algebras* **81**

N. Konovenko *The invariants of planar 3-webs with respect to group of symplectic diffeomorphisms, for the case of the conformal group* **84**

E. Kudryavtseva *Topology of spaces of smooth functions and gradient-like flows with prescribed singularities on surfaces* **85**

G. Kuduk *Nonlocal problem with integral conditions for homogeneous system of partial differential equations of second order* **87**

I. Kuznietsova, Yu. Soroka *Realization of groups as fundamental groups of orbits of smooth maps* **88**

K. Gürlebeck, D. Legatiuk *Modified quaternionic operator calculus and its application to micropolar elasticity* **90**

S. Maksymenko, E. Polulyakh *On non-Hausdorff manifolds of dimension 1* **92**

S. Maksymenko *Symplectomorphisms preserving smooth functions on surfaces* **93**

M. Maloid-Hliebova *Second classical Zariski topology of multiplicational module* **94**

I. Marko *Incomplete spaces of idempotent measures* **95**

N. Mazurenko, M. Zarichnyi *Hyperspaces of convex sets related to idempotent mathematics* **96**

A. Mednykh *Volumes of knots and links in spaces of constant curvature* **98**

R. Mohseni, R. A. Wolak *Twistor spaces on foliated manifolds* **99**

P. Mormul *Two problems in nonholonomic geometry (in quest of a co-worker)* **100**

F. Mukhamadiev *The local τ-density of a linearly ordered spaces* **101**

T. Obikhod *Entropy and phase transitions in Calabi-Yau space* **102**

A. Orevkova *Reducing singularities of smooth functions to normal forms* **104**

T. Osipchuk *On m-convexity and m-semiconvexity of sets in Euclidean spaces* **106**

V. Ostrovskyi, O. Ostrovska, D. Proskurin, Yu. Samoilenko *On representations of q_{ij}-commuting isometries* **108**

J.F. Peters *Homotopic Nerve Complexes with Free Group Presentations* **110**

P. Laurain, M. Petrache *Uniform measures in Euclidean space* **112**