

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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- Ministry of Education and Science of Ukraine
- Odesa National University of Technology, Ukraine
- Institute of Mathematics of the National Academy of Sciences of Ukraine
- Taras Shevchenko National University of Kyiv
- Kyiv Mathematical Society

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## Notes on the Quality of Non-compactness for Non-compact Sobolev Embeddings

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It is well known that when a Sobolev space on a bounded domain is embedded into the smallest possible Lebesgue or Lorentz space, the resulting embedding is non-compact. In this talk, we will closely examine non-compact Sobolev embeddings and describe the quality of their non-compactness from different points of view.

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## Ordinary linear differential operators and connections. Application to curvilinear webs

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The framework is real analytic or holomorphic, the field  $\mathbb{K}$  denoting  $\mathbb{R}$  or  $\mathbb{C}$  according to this framework.

We are given two vector bundles  $E$  and  $F$ , respectively of rank  $p$  and  $q$ , over a  $n$ -dimensional manifold  $V$ . We assume  $q < p(n + 1)$  (the rank of  $F$  is smaller than the rank of  $J^1E$ ). A linear homogeneous differential operator of order one<sup>1</sup> is a linear morphism of vector bundles  $D: J^1E \rightarrow F$ . Associated to it is the partial order equation

$$(*) \quad \mathcal{D}s = 0, \text{ where we set, for any section } s \text{ of } E, \mathcal{D}s := D(j^1s).$$

<sup>1</sup>The theory works also for differential operators of higher order.

<b>G. Kuduk</b> <i>Integral problem for system of partial differential equations of third order</i>	<b>65</b>
<b>A. Kuramoto</b> <i>The density of Borromean primes</i>	<b>66</b>
<b>I. Kurbatova, N. Konovenko, M. Pistruil</b> <i>Invariant transformation of generalized-recurrent-parabolic spaces that are in a quasi-geodesic mapping</i>	<b>68</b>
<b>J. Lang</b> <i>Notes on the Quality of Non-compactness for Non-compact Sobolev Embeddings</i>	<b>70</b>
<b>D. Lehmann</b> <i>Ordinary linear differential operators and connections. Application to curvilinear webs</i>	<b>70</b>
<b>Jian Liu, Dong Chen, and Guo-Wei Wei</b> <i>Persistent interaction topology in data analysis</i>	<b>73</b>
<b>L. Lotarets</b> <i>Reeb vector field as isometric embedding</i>	<b>73</b>
<b>S. Maksymenko, M. Lysynskiy</b> <i>Classification of smooth structures on line with two origins</i>	<b>75</b>
<b>D. Maingi</b> <i>Vector bundle construction via monads on multiprojective spaces</i>	<b>77</b>
<b>O. Makarchuk</b> <i>About one problem of the Gauss-Kuzmin type</i>	<b>78</b>
<b>S. Maksymenko</b> <i>Homotopy types of stabilizers of Morse-Bott functions on 3-manifolds</i>	<b>79</b>
<b>M. Jinzenji, K. Kuwata</b> <i>Elliptic Virtual Structure Constants and Generalizations of BCOV-Zinger Formula to Projective Fano Hypersurfaces</i>	<b>80</b>
<b>B. Mazhar, S. Maksymenko</b> <i>Deformation properties of smooth functions on Klein bottle</i>	<b>80</b>
<b>Ł. Michalak</b> <i>Algebraic periods of surface homeomorphisms</i>	<b>82</b>
<b>H. Monaim</b> <i>Wigner-Ville distribution associated with quadratic Clifford-Fourier transform</i>	<b>82</b>
<b>P. Mormul</b> <i>Non-simple strongly nilpotent distribution germs</i>	<b>82</b>
<b>V. Mykhaylyuk</b> <i>Extending of partial metrics</i>	<b>83</b>
<b>C. L. Nehaniv</b> <i>Axiomatic Development of Complexity Theory for Finite Groups</i>	<b>84</b>
<b>M. Nesterenko</b> <i>Construction and application of quasicrystals</i>	<b>85</b>
<b>M. Nijjima</b> <i>On Beloch's curve that appears when solving real cubic with origami</i>	<b>87</b>
<b>Z. Novosad, A. Zagorodnyuk</b> <i>Hypercyclicity of symmetric composition operator</i>	<b>89</b>
<b>M. Nxumalo</b> <i>On <math>(i, j)</math>-Baire Bilocales</i>	<b>89</b>
<b>T. Obikhod</b> <i>Application of the dynamical system theory for counting black hole entropy of microstates</i>	<b>90</b>