

International  
Online Conference



**Algebraic  
and Geometric  
Methods of Analysis**

dedicate to the memory  
of Yuriy Trokhymchuk  
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## 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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# On real $\Sigma^*$ -algebras of operators

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Real  $\Sigma^*$ -algebras of operators are introduced and their connections with (complex)  $\Sigma^*$ -algebras and real von Neumann algebras are discussed.

## REFERENCES

- [1] Ayupov, Sh.A.; Rakhimov, A.A.; Usmanov, Sh.M., *Jordan, real and Lie structures in operator algebras.* (English) Mathematics and its Applications, Vol. 418. Kluwer Academic Publishers Group, Dordrecht (1997), 225 pp.
- [2] Connes, A., *A factor not anti-isomorphic to itself.* (English) Bull. London Math. Soc. Vol. 7 (1975), pp. 171–174.
- [3] Davies, E.B., *On the Borel structure of  $C^*$ -algebras.* (English) Comm. Math. Phys. Vol. 8 (1968), pp. 147–163.
- [4] Emch, G.E., *Algebraic methods in statistical mechanics and quantum field theory.* (English) Interscience monographs and texts in Physics and Astronomy, Vol. 26, Wiley-Interscience (1972), 333 pp.
- [5] Ingelstam, L., *Real Banach algebras.* (English) Ark. Mat. Vol. 5 (1964), pp. 239–270.
- [6] Li, B.-R., *Real operator algebras.* (English) Bimodules in operator algebras (Japanese) (Kyoto, 1995). Sūrikaiseikikenkyūsho Kōkyūroku No. 936 (1996), pp. 58–69.
- [7] Li, B.-R., *Real operator algebras.* (English) World Scientific Publishing Co., Inc., River Edge, NJ (2003), 241 pp.
- [8] Pedersen, G.K.,  *$C^*$ -algebras and their automorphism groups.* (English) 2nd ed., Edited and with a preface by Eilers, S. and Olesen, D., Pure and Applied Mathematics (Amsterdam). Academic Press, London, (2018), 520 pp.
- [9] Plymen, R.J.,  *$C^*$ -algebras and Mackey's axioms.* (English) Comm. Math. Phys. Vol. 8 (1968), pp. 132–146.
- [10] Rosenberg, J.M., *Structure and applications of real  $C^*$ -algebras.* (English) Operator algebras and their applications, pp. 235–258, Contemp. Math., Vol. 671, Amer. Math. Soc., Providence, RI (2016).
- [11] Størmer, E., *On anti-automorphisms of von Neumann algebras.* (English) Pacific J. Math. Vol. 21 (1967), pp. 349–370.
- [12] Størmer, E., *Irreducible Jordan algebras of self-adjoint operators.* (English) Trans. Amer. Math. Soc. Vol. 130 (1968), pp. 153–166.

<b>I. Gelbukh</b> <i>Realization of a graph as the Reeb graph of a Morse, Morse–Bott or round function</i>	<b>38</b>
<b>N. Glazunov</b> <i>Foliations in moduli spaces of abelian varieties and bounded global <math>G</math>-shtukas</i>	<b>40</b>
<b>A. Glebova</b> <i>Geometry of curves in three-dimensional space and invariants of nonlinear differential equations of the second order</i>	<b>41</b>
<b>P. Petrenko, A. Andreev</b> <i>On Orthosymmetric <math>n</math>-morphisms</i>	<b>42</b>
<b>M. Golasinski</b> <i>On homotopy nilpotency of Moore space</i>	<b>43</b>
<b>E. Afanas'eva, A. Golberg</b> <i>Metric viewpoint in mapping theory between Riemannian manifolds</i>	<b>45</b>
<b>S. V. Gryshchuk</b> <i>Monogenic functions with values in commutative complex algebras of the second rank with unity and generalized biharmonic equation with non-zero simple characteristics</i>	<b>46</b>
<b>A. Guale, J. Vielma</b> <i>The Collatz conjecture from an algebraic point of view</i>	<b>47</b>
<b>O. Gutik, P. Khylynskyi</b> <i>On the monoid of cofinite partial isometries of positive integers with a bounded finite noise</i>	<b>48</b>
<b>O. Gutik, M. Mykhalenych</b> <i>On some generalization of the bicyclic monoid</i>	<b>50</b>
<b>Y. Gutman</b> <i>Variational principles for metric mean dimension</i>	<b>51</b>
<b>O. Ye. Hentosh, A. K. Prykarpatski</b> <i>A generalized Lie-algebraic approach to constructing of integrable fractional dynamical systems</i>	<b>52</b>
<b>L. Yanovich, M. Ignatenko</b> <i>On the solution of separate differential equations with variational derivatives of the first and second orders</i>	<b>54</b>
<b>Sh. Sh. Ismoilov</b> <i>Special mean and total curvature of a dual surface in isotropic spaces</i>	<b>57</b>
<b>D. Jumaev, A. Zaitov</b> <i>A topological transformation group of a hyperspace</i>	<b>59</b>
<b>D. A. Juraev</b> <i>On the Carleman function for matrix factorizations of the Helmholtz equation</i>	<b>62</b>
<b>A. Kachurovskii</b> <i>Measuring the rate of convergence in the Birkhoff ergodic theorem</i>	<b>64</b>
<b>O. Kadubov's'kyi</b> <i>Enumeration of topologically non-equivalent functions with one degenerate saddle critical point on triple torus</i>	<b>65</b>
<b>O. Karupu</b> <i>On some properties of moduli of smoothness of conformal mapping of simply connected domains</i>	<b>68</b>
<b>D. Katz</b> <i>Integration over non-rectifiable curves: spirals of high torsion</i>	<b>70</b>
<b>A. A. Katz</b> <i>On real <math>\Sigma^*</math>-algebras of operators</i>	<b>72</b>
<b>L. Fardigola, K. Khalina</b> <i>On controllability problems for the heat equation with variable coefficients controlled by the Dirichlet boundary condition on a half-axis</i>	<b>73</b>