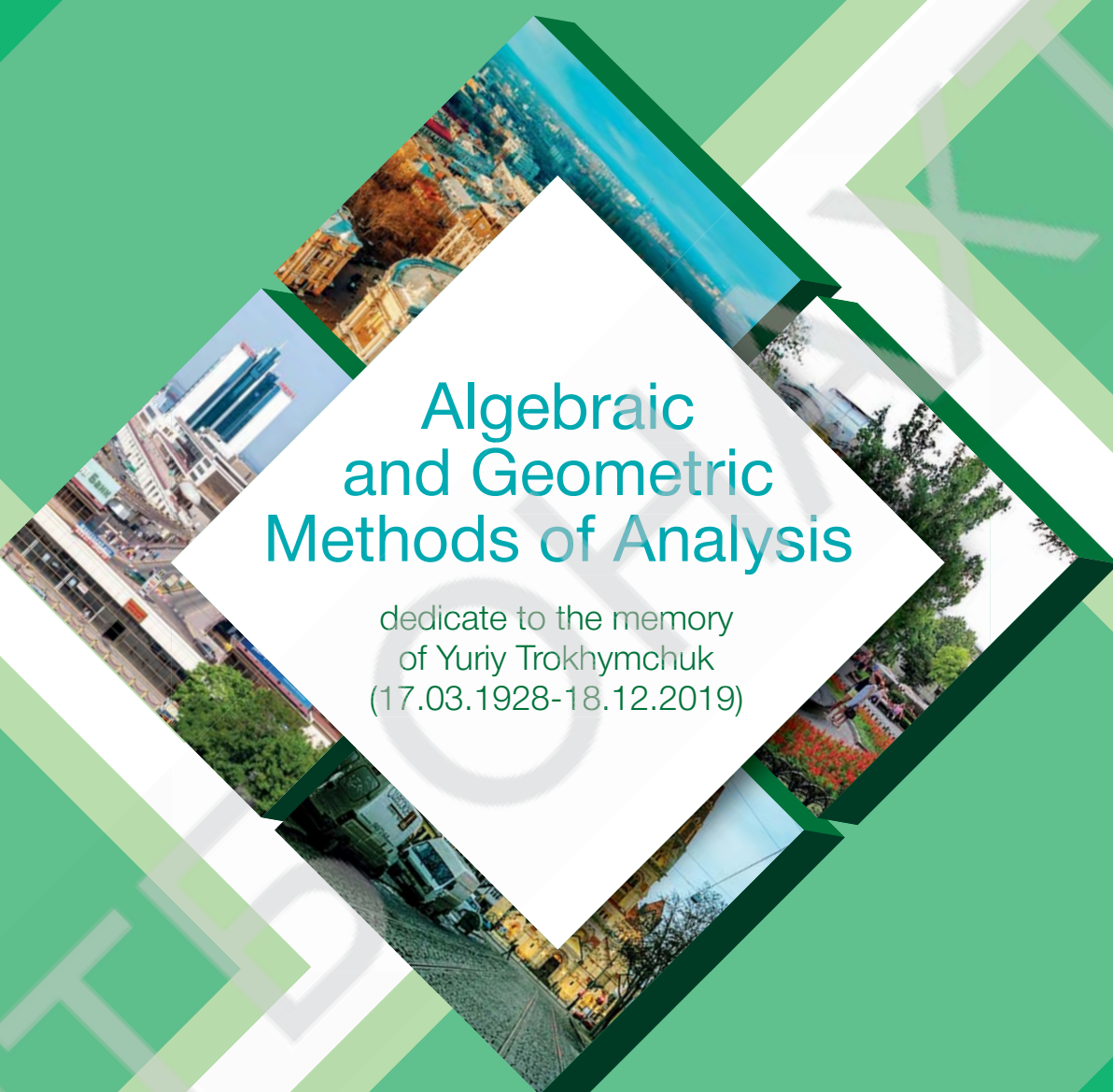


International
Online Conference



**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

ORGANIZERS

- Ministry of Education and Science of Ukraine
- Odesa National Academy of Food Technologies
- Institute of Mathematics of the National Academy of Sciences of Ukraine
- Taras Shevchenko National University of Kyiv
- International Geometry Center
- Kyiv Mathematical Society

SCIENTIFIC COMMITTEE

Drozd Yu.

(Kyiv, Ukraine)

Maksymenko S.

(Kyiv, Ukraine)

Plaksa S.

(Kyiv, Ukraine)

Prishlyak A.

(Kyiv, Ukraine)

Bakhtin O.

(Kyiv, Ukraine)

Balan V.

(Bucharest, Romania)

Banakh T.

(Lviv, Ukraine)

Borysenko O.

(Kharkiv, Ukraine)

Cherevko Ye.

(Odesa, Ukraine)

Fedchenko Yu.

(Odesa, Ukraine)

Karlova O.

(Chernivtsi, Ukraine)

Kiosak V.

(Odessa, Ukraine)

Konovenko N.

(Odessa, Ukraine)

Lyubashenko V.

(Kyiv, Ukraine)

Matsumoto K.

(Yamagata, Japan)

Mormul P.

(Warsaw, Poland)

Mykhailyuk V.

(Chernivtsi, Ukraine)

Plachta L.

(Krakov, Poland)

Pokas S.

(Odessa, Ukraine)

Sabitov I.

(Moscow, Russia)

Savchenko O.

(Kherson, Ukraine)

Sergeeva A.

(Odessa, Ukraine)

Shelekhov A.

(Tver, Russia)

Zarichnyi M.

(Lviv, Ukraine)

ADMINISTRATIVE COMMITTEE

- Egorov B., chairman, rector of the ONAFT;
- Povarova N., deputy chairman, Pro-rector for scientific work of the ONAFT;
- Mardar M., Pro-rector for scientific-pedagogical work and international communications of the ONAFT;
- Fedosov S., Director of the International Cooperation Center of the ONAFT;
- Kotlik S., Director of the P.M. Platonov Educational-scientific institute of computer systems and technologies "Industry 4.0";
- Lishchenko N. Dean of faculty of the computer systems and automation ONAFT

ORGANIZING COMMITTEE

Cherevko Ye.
Eftekharinasab K.
Fedchenko Yu.
Feshchenko B.
Khohlyk O.

Klishchuk B.
Konovenko N.
Kravchenko A.
Kuznietsova I.
Maksymenko S.

Osadchuk E.
Plakosh A.
Prus A.
Sergeeva A.
Soroka Yu.

The analogue of Darboux equation in Galilean space

Safarov Tulqin Nazarovich

(Termez State University (Uzbekiston))

E-mail: tolqin.1986@mail.ru

Let the surface F of the class $C^k (k \geq 2)$ in R_3^1 be given by the vector function $r = r(u, v)$ in the region $D \in R_2^1$, we will assume that the Cartesian coordinates R_3^1 are entered in x, y, z , and let k be the unit vector of the axis z . Each of the coordinates of the vector $r(u, v) = \{u, y(u, v), z(u, v)\}$ satisfies a certain differential equation. Let's deduce it, for example, for function $z(u, v)$.

Obviously, $z(u, v) = (r(u, v), k)$. Then

$$z_u = (r_u, k), \quad z_v = (z_v, k), \quad z_{uu} = (r_{uu}, k), \quad z_{uv} = (r_{uv}, k), \quad z_{vv} = (r_{vv}, k).$$

Using derivation formulas in R_3^1 we get

$$z_{uu} = \Gamma_{11}^2 z_v + L(n, k), \quad z_{uv} = \Gamma_{12}^2 z_v + M(n, k), \quad z_{vv} = \Gamma_{22}^2 z_v + N(n, k) \quad (1)$$

Where L, M, N is the coefficients of the second quadratic form, n is the surface normal.

If we introduce the notation

$$z_{11} = z_{uu} - \Gamma_{11}^2 z_v, \quad z_{12} = z_{uv} - \Gamma_{12}^2 z_v, \quad z_{22} = z_{vv} - \Gamma_{22}^2 z_v \quad (2)$$

then from (1) and (2) we obtain

$$z_{11} = L(n, k), \quad z_{12} = M(n, k), \quad z_{22} = N(n, k) \quad (3)$$

The unit normal vector is determined by the formula

$$n = \left\{ 0, \frac{z_v}{\sqrt{y_v^2 + z_v^2}}, -\frac{y_v}{\sqrt{y_v^2 + z_v^2}} \right\}.$$

We have

$$(n, k) = -\frac{y_v}{\sqrt{y_v^2 + z_v^2}} \quad (4)$$

the for formula above gives a determination for the unit normal vector.

From (3) and (4) we obtain.

$$L = -\frac{z_{11}}{y_v} \sqrt{y_v^2 + z_v^2}, \quad M = -\frac{z_{12}}{y_v} \sqrt{y_v^2 + z_v^2}, \quad N = -\frac{z_{22}}{y_v} \sqrt{y_v^2 + z_v^2} \quad (5)$$

From equalities (5) and the formula for the Gaussian curvature $K = \frac{LN - M^2}{G}$ we obtain the Darboux equation $z_{11} z_{22} - z_{12}^2 = y_v^2 K$.

REFERENCES

- [1] A. Artykboev., D. D. Sokolov. Geometry as a whole in space-time. – Tashkent: "Fan" 1991.
 [2] I.Ya. Bakelman, A.L. Verner, B.E. Kantor. An introduction to differential geometry "in the large". – Moscow: "Nauka", 1973.

Y. Chapovskyi, D. Efimov, A. Petravchuk <i>Centralizers of elements in Lie algebras of vector fields</i>	113
E. Petrov, R. Salimov <i>Properties of quasisymmetric mappings to preserve the structures of spaces</i>	114
D. R. Popovych <i>IW contractions and their generalizations</i>	116
Prabhjot Singh <i>Weak Separation Condition coincides Finite Type Condition</i>	118
Pratyush Pranav <i>Topological data analysis for cosmology: theory and applications</i>	120
A. Prishlyak, Ch. Hatamian <i>Morse flows with singularities on boundary of 3-manifolds</i>	121
V. Prokip <i>On the matrix equation $AX - YB = C$ over Bezout domains</i>	122
A. Prykarpatsky, I. Mykytyuk <i>On the metric equations generated by symplectic deformations on $P_2(C)$</i>	124
O. Reinov <i>On a result of G. Pisier concerning Sidon sets</i>	126
A. K. Sadullaev, F. G. Mukhamadiev <i>On the τ-placedness of space of the permutation degree</i>	127
T. N Safarov <i>The analogue of Darboux equation in Galilean space</i>	128
V. M. Safonov, I. V. Zamrii, O. V. Safonova <i>On countable multiplicity of mappings</i>	129
A. Savchenko <i>Fuzzy ultrametrization of spaces of non-additive measures on fuzzy ultrametric spaces</i>	130
O. Sazonova <i>About one class of continual approximate solutions with arbitrary density</i>	131
J. Segert <i>Painlevé VI Solutions From Equivariant ADHM Instanton Bundles</i>	133
A. Serdyuk, I. Sokolenko <i>Asymptotic estimates for the widths of classes of periodic functions of high smoothness</i>	135
H. Sinyukova <i>Some generalizations of the known theorems of the type of geodesical unique definability</i>	138
S. Som, A. Bera, L. K. Dey <i>Some remarks on the Metrizable of F-metric spaces</i>	139
P. Stegantseva, M. Grechneva <i>The surfaces with the flat normal connection and the constant curvature of Grassmann image in Minkowski space</i>	140
A. Skryabina, P. Stegantseva <i>The relation between T_0-topologies with the weight $2^{n-2} < k \leq 2^{n-1}$ on n-element set and T_0-topologies close to the discrete on $(n - 1)$-element set</i>	142
Ya. B. Stelmakh <i>The Golomb and Kirch topologies on the set of nonzero integers</i>	143
D. Dmitrishin, A. Stokolos <i>On symmetrization of univalent polynomials</i>	144