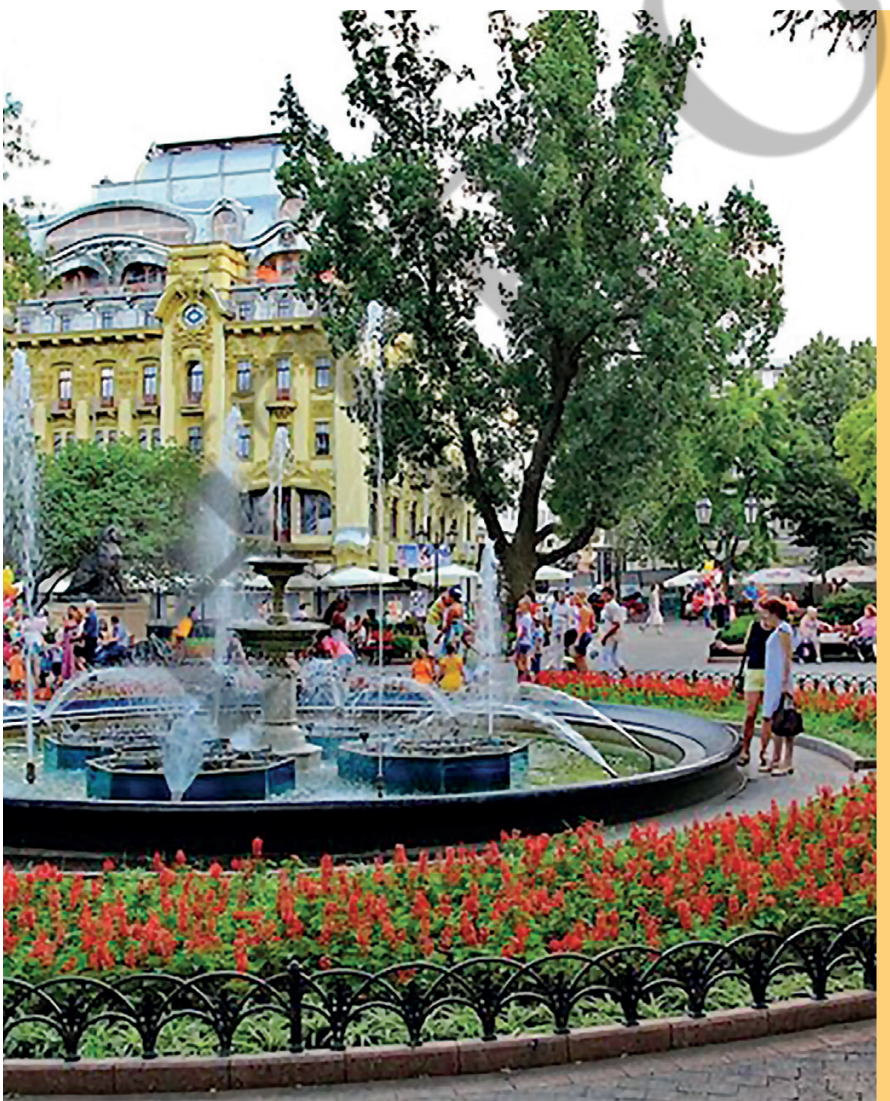
International
Scientific Conference

Algebraic and Geometric Methods of Analysis



Devoted to 160 anniversary of
Dvytro Grave
(25.08.1863 - 19.12.1939)
Academician of the Ukrainian Academy of Sciences, the first director of the Institute of Mathematics of NAS of Ukraine

May 29 – June 1, 2023
Odesa, Ukraine

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

Organizers

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

Scientific Committee

- **Bolotov D.** (*Kharkiv, Ukraine*)
- **Bondarenko V.** (*Kyiv, Ukraine*)
- **Boychuk O.** (*Kyiv, Ukraine*)
- **Boyko V.** (*Kyiv, Ukraine*)
- **Cherevko Ye.** (*Odesa, Ukraine*)
- **Dorogovtsev A.** (*Kyiv, Ukraine*)
- **Drozd Yu.** (*Kyiv, Ukraine*)
- **Gerasymenko V.** (*Kyiv, Ukraine*)
- **Fedchenko Yu.** (*Odesa, Ukraine*)
- **Kiosak V.** (*Odesa, Ukraine*)
- **Kochubei A.** (*Kyiv, Ukraine*)
- **Konovenko N.** (*Odesa, Ukraine*)
- **Maksymenko S.** (*Kyiv, Ukraine*)
- **Mikhailets V.** (*Kyiv, Ukraine*)
- **Ostrovskyi V.** (*Kyiv, Ukraine*)
- **Petravchuk A.** (*Kyiv, Ukraine*)
- **Plaksa S.** (*Kyiv, Ukraine*)
- **Portenko M.** (*Kyiv, Ukraine*)
- **Pratsiovytyi M.** (*Kyiv, Ukraine*)
- **Savchenko O.** (*Kherson, Ukraine*)
- **Romanyuk A.** (*Kyiv, Ukraine*)
- **Timokha O.** (*Kyiv, Ukraine*)

Organizing commitee

- **Maksymenko S.** (*Kyiv, Ukraine*)
- **Konovenko N.** (*Odesa, Ukraine*)
- **Fedchenko Yu.** (*Odesa, Ukraine*)
- **Cherevko Ye.** (*Odesa, Ukraine*)
- **Osadchuk Ye.** (*Odesa, Ukraine*)
- **Sergeeva O.** (*Odesa, Ukraine*)

On K-ultrametrics and $*$-measures

Khrystyna Sukhorukova
(Ukraine, Lviv, Universytetska str., 1)
E-mail: kristinsukhorukova@gmail.com

The notion of K-ultrametric is introduced in [1]. A metric d on a set X is called a K-ultrametric, where $K \in [0, \infty]$, if $d(x, y) \leq K$, whenever $\min\{d(x, z), d(y, z)\} \leq K$.

Any 0-ultrametric is a metric, and any ∞-ultrametric is an ultrametric.

Some resent results are devoted to the K-ultrametrization of various functorial constructions on the category of K-ultrametric spaces: hyperspaces, spaces of probability measures, spaces of idempotent measurers [1, 2].

The aim of the talk is provide a construction of K-ultrametrization of the spaces of $*$-measures. Recall that a t-norm is a binary operation $*$ on $[0, 1]$ which is associative, commutative, continuous, monotone, and 1 is a unit for it.

A functional $\mu : C(X, [0, 1]) \to [0, 1]$ is called an $*$-measure if

1) μ preserves constants;
2) $\mu(\max\{\varphi, \psi\}) = \max\{\mu(\varphi), \mu(\psi)\}$;
3) $\mu(\lambda * \varphi) = \lambda * \mu(\varphi)$.

It is proved that the mentioned construction determines a functor on the category of K-ultrametric spaces and K-nonexpanding maps.

References

[1] Oleksandr Savchenko. A remark on stationary fuzzy metric spaces. *Carpatian Mathematical Publications*, 3(1) : 124–129, 2011.
[2] Oleksandr Savchenko. K-ultrametric spaces. *Proceedings of the International Geometry Center*, 1(1) : 42–49, 2011.
[3] Khrystyna Sukhorukova, Mykhailo Zarichnyi. On spaces of *-measures on ultrametric spaces. *Visnyk of the Lviv University. Series Mechanics and Mathematics.*, 90 : 76–83, 2021.

The Iwasawa invariants of Z_p^d-covers of links

Sohei Tateno
(Nagoya University, Japan)
E-mail: inu.kaimashita@gmail.com

In this talk, we will define the Iwasawa invariants of links and give two asymptotic formulae for the first homology groups of $\mathbb{Z}_p^d$-covers of links in rational homology 3-spheres, which are generalizations of the Iwasawa type formulae proven by Hillman–Matei–Morishita and Kadokami–Mizusawa. We will also provide examples of these formulae. Moreover, when $d = 2$, considering the twisted Whitehead links, we will explain that Iwasawa μ-invariants can be arbitrary non-negative integers. This is a joint work with Jun Ueki.

References

[1] Sohei Tateno and Jun Ueki, *The Iwasawa invariants of $\mathbb{Z}_p^d$-covers of links*, in preparation.