International scientific conference

“Algebraic and Geometric Methods of Analysis”

Book of abstracts

May 28 - June 3, 2019

Odesa, Ukraine

Conference webpage: *imath.kiev.ua/~topology/conf/agma2019/*

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 problems in mathematical analysis
- Geometric and topological methods in natural sciences
- History and methodology of teaching in mathematics

Organizers

- The Ministry of Education and Science of Ukraine
- Odesa National Academy of Food Technologies
- The Institute of Mathematics of the National Academy of Sciences of Ukraine
- Odessa I. I. Mechnikov National University
- Taras Shevchenko National University of Kyiv
- The International Geometry Center

Program Committee

Chairman: Prishlyak A.
(*Kyiv, Ukraine*)
Balan V.
(*Bucharest, Romania*)
Banakh T.
(*Lviv, Ukraine*)
Fedchenko Yu.
(*Odesa, Ukraine*)
Fomenko A.
(*Moscow, Russia*)
Fomenko V.
(*Taganrog, Russia*)
Haddad M.
(*Wadi al-Nasara, Syria*)
Karlova O.
(*Chernivtsi, Ukraine*)
Kiosak V.
(*Odessa, Ukraine*)
Kirillov V.
(*Odesa, Ukraine*)
Konovenko N.
(*Odesa, Ukraine*)
Lyubashenko V.
(*Kyiv, Ukraine*)
Maksymenko S.
(*Kyiv, Ukraine*)
Matsumoto K.
(*Yamagata, Japan*)
Mikesh J.
(*Olomouc, Czech Republic*)
Mormul P.
(*Warsaw, Poland*)
Moskaliuk S.
(*Wien, Austria*)
Mykhailyuik V.
(*Chernivtsi, Ukraine*)
Nykyforchyn O.
(*Ivano-Frankivsk, Ukraine*)
Plachta L.
(*Krakov, Poland*)
Pokas S.
(*Odesa, Ukraine*)
Polulyakh E.
(*Kyiv, Ukraine*)
Sabitov I.
(*Moscow, Russia*)
Savchenko A.
(*Kherson, Ukraine*)
Sergeeva A.
(*Odesa, Ukraine*)
Shvets V.
(*Odesa, Ukraine*)
Shelekhov A.
(*Tver, Russia*)
Vlasenko I.
(*Kyiv, Ukraine*)
Volkov V.
(*Odessa, Ukraine*)
Zadorozhnyj V.
(*Odesa, Ukraine*)
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;
- Svytyy I., Dean of the Faculty of Computer Systems and Automation.

Organizing commitee

Kirillov V.
Konovenko N.
Fedchenko Yu.
Prus A.
Osadchuk E.
Maksymenko S.
Khudenko N.
Cherevko E.

Diffeomorphisms preserving Morse-Bott foliations

Olexandra Khohliyk
(Department of Geometry, Topology and Dynamic Systems, Taras Shevchenko National University of Kyiv, Hlushkova Avenue, 4e, Kyiv, 03127 Ukraine)
E-mail: khokhliyk@gmail.com

Sergiy Maksymenko
(Topology Laboratory, Institute of Mathematics of NAS of Ukraine, Tereshchenkivska str., 3, Kyiv, 01004 Ukraine)
E-mail: maks@imath.kiev.ua

Let M be a smooth compact manifold and $\mathcal{F}$ be a codimension one foliation on M having singular leaves of Morse-Bott type. This means that there the set Σ of singular leaves of $\mathcal{F}$ is a disjoint union of compact submanifolds Let also $\mathcal{D}(\mathcal{F})$ be the group of diffeomorphisms of M leaving each leaf invariant, and $\mathcal{D}(\mathcal{F},\Sigma)$ be the subgroup of $\mathcal{D}(\mathcal{F})$ consisting of diffeomorphisms fixed on Σ.

Theorem 1. [1] *The "restriction to Σ map"*

$$\rho\colon \mathcal{D}(\mathcal{F}) \to \mathcal{D}(\Sigma), \qquad \rho(h) = h|_{\Sigma_f},$$

is a locally trivial fibration with fibre $\mathcal{D}(\mathcal{F},\Sigma)$.

This result can be regarded as a "foliated" variant of the well know results by Cerf and Palais on local triviality of restrictions. In particular, the map ρ has a path-lifting property, and so it contains a "foliated" variant of isotopy extension theorem:

Corollary 2. [1] *Let $H : \Sigma \times [0,1] \to \Sigma$ be a C^∞ isotopy with $H_0 = \mathrm{id}_\Sigma$. Then it extends to an isotopy $H : M\times \to M$ such that $H_t \in \mathcal{D}(\mathcal{F},\Sigma)$ for all $t \in [0,1]$.*

References

[1] Olexandra Khohliyk, Sergiy Maksymenko, *Diffeomorphisms preserving Morse-Bott functions*, arXiv:1808.03582

Зміст