

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

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On Orthosymmetric n-morphisms

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Let E and F be vector lattices. We say that a bilinear mapping $T : E \times E \rightarrow F$ is an orthosymmetric mapping if $T(x, y) = 0$ in F , whenever $|x| \wedge |y| = 0$ in E . Generalization of this definition for n linear mapping is that $T : E \times E \times \dots \times E \rightarrow F$ is an orthosymmetric multilinear mapping if $T(x_1, x_2, \dots, x_n) = 0$ for all $x_1, \dots, x_n \in E$ such that $|x_i| \wedge |x_j| = 0$ for some pair of indices $1 \leq i, j \leq n$. By E^\sim we denote the set of all order bounded linear functionals on E . E_n^\sim denotes the set of all order continuous linear functionals on E . By $(E^\sim)_n^\sim$ we denote the order continuous order bidual of E . Let E_1, \dots, E_n and F be vector lattices. A multilinear mapping $\Psi : E_1 \times \dots \times E_n \rightarrow F$ is said to be a lattice n -morphism if $|\Psi(x_1, \dots, x_n)| = \Psi(|x_1|, \dots, |x_n|)$ for all $x_i \in E_i$ for $i = 1, 2, \dots, n$. We say that a lattice n -morphism and orthosymmetric multilinear mapping is an orthosymmetric n -morphism.

Orthosymmetric bilinear mappings have been studied by a lot of authors. For example, M.A. Toumi and R. Yilmaz give the extensions of orthosymmetric bilinear mapping to the order continuous order bidual of a vector lattice by using Arens multiplication.

In this study, we extend an orthosymmetric n -morphism to the order continuous order bidual of a vector lattice by using Arens product. We show that an extension of orthosymmetric n -morphism is again orthosymmetric n -morphism. Unexplained notion and terminology we refer to the following references.

Theorem 1. *Suppose that E is an Archimedean vector lattice and F is a Dedekind complete vector lattice. If $\Psi : E \times E \times \dots \times E \rightarrow F$ is an orthosymmetric n -morphism, then n -th order adjoint of Ψ on the order continuous order bidual $(E^\sim)_n^\sim$ of E is again an orthosymmetric n -morphism.*

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