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Methods of Analysis”**

Book of abstracts



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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

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ФІТБ ОНАФТ

The Shanin number and the predshanin number of N_τ^φ -kernel of a topological spaces

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A cardinal $\tau \geq \aleph_0$ is said to be a caliber of the space X if for any family $\mu = \{U_\alpha : \alpha \in A\}$ of nonempty open in X sets such that $|A| = \tau$, there exists $B \subset A$, for which $|B| = \tau$, and $\bigcap\{U_\alpha : \alpha \in B\} \neq \emptyset$. Set $k(X) = \{\tau : \tau \text{ is a caliber of the space } X\}$.

The cardinal number $\min\{\tau : \tau^+ \text{ is caliber of } X\}$ is called the Shanin number of X and denoted by $sh(X)$, where τ^+ is the least cardinal number from all cardinals strictly greater than τ .

A cardinal $\tau \geq \aleph_0$ is said to be a precaliber of the space X if for any family $\mu = \{U_\alpha : \alpha \in A\}$ of nonempty open in X sets such that $|A| = \tau$, there exists $B \subset A$, for which $|B| = \tau$, and $\{U_\alpha : \alpha \in B\}$ is centered. Set $pk(X) = \{\tau : \tau \text{ is a precaliber of the space } X\}$.

The cardinal number $\min\{\tau : \tau^+ \text{ is precaliber of } X\}$ is called the predshanin number of X and denoted by $psh(X)$, where τ^+ is the least cardinal number from all cardinals strictly greater than τ .

A system $\xi = \{F_\alpha : \alpha \in A\}$ of closed subsets of a space X is called *linked* if any two elements from ξ intersect [1].

A.V. Ivanov defined the space NX of complete linked systems (CLS) of a space X in a following way:

Definition 1. A linked system M of closed subsets of a compact X is called a *complete linked system* (a CLS) if for any closed set of X , the condition

“Any neighborhood OF of the set F consists of a set $\Phi \in M$ ”

implies $F \in M$ [2].

A set NX of all complete linked systems of a compact X is called *the space NX of CLS of X* . This space is equipped with the topology, the open basis of which is formed by sets in the form of

$E = O(U_1, U_2, \dots, U_n)(V_1, V_2, \dots, V_s) = \{M \in NX : \text{for any } i = 1, 2, \dots, n \text{ there exists } F_i \in M \text{ such that } F_i \subset U_i, \text{ and for any } j = 1, 2, \dots, s, F \cap V_j \neq \emptyset \text{ for any } F \in M\}$, where $U_1, U_2, \dots, U_n, V_1, V_2, \dots, V_s$ are nonempty open in X sets [2].

Definition 2. Let X be a compact space, φ be a cardinal function and τ be an arbitrary cardinal number. We call an N_τ^φ -kernel of a topological space X the space

$$N_\tau^\varphi X = \{M \in NX : \exists F \in M : \varphi(F) \leq \tau\}.$$

Theorem 3. Let X be an infinity compact space and $\varphi = d, \tau = \aleph_0$. Then:

- 1) $sh(N_\tau^\varphi X) \leq sh(X)$;
- 2) $psh(N_\tau^\varphi X) \leq psh(X)$.

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