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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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НТБ ОНАФТ

On the Chogoshvili's spectral homology theory of the second family

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Let LP_2 be a category of pairs of locally compacted paracompact spaces and their proper mappings, and $(X, A) \in LP_2$. Locally finite open covering $\alpha_r = \{U_t^{(\alpha_r)} | t \in T^{(\alpha_r)}\}$ of a space X is called a regular covering, if the closures of its elements are compact in X . Let denote induced by a covering α_r a regular covering in the subspace A as $\widetilde{\alpha}_r$. Let denote as $Cov^r(X, A) = \{(\alpha_r, \widetilde{\alpha}_r) | \alpha_r \in Cov^r(X)\}$ the set of all regular coverings of the pair (X, A) , and as $(N_{\alpha_r}, N_{\widetilde{\alpha}_r})$ a pair of nerves of the pair coverings $(\alpha_r, \widetilde{\alpha}_r)$. Each inscription $(\alpha_r, \widetilde{\alpha}_r) \succ (\alpha'_r, \widetilde{\alpha}'_r)$ defines

$$\pi_{\alpha'_r}^{\alpha_r} : (N_{\alpha_r}, N_{\widetilde{\alpha}_r}) \rightarrow (N_{\alpha'_r}, N_{\widetilde{\alpha}'_r}) \quad (1)$$

the pairwise adjacent simplicial mappings. Let $H_n^{\text{inf}}(N_{\alpha_r}, N_{\widetilde{\alpha}_r}; G)$ and $H_f^n(N_{\alpha_r}, N_{\widetilde{\alpha}_r}; H)$ n -dimensional homology and cohomology groups of all arbitrary (possible) cycles and finite cocycles of pairs of complexes $(N_{\alpha_r}, N_{\widetilde{\alpha}_r})$ with coefficients from groups G and H respectively. Then these groups and the homomorphisms $\pi_{\alpha'_r*}^{\alpha_r}$ and $\pi_{\alpha'_r}^{\alpha_r*}$, induced by the mappings (1), are constitute the direct and inverse spectra respectively homological and cohomological groups and homomorphisms:

$$\left\{ H_n^{\text{inf}}(N_{\alpha_r}, N_{\widetilde{\alpha}_r}; G), \pi_{\alpha'_r*}^{\alpha_r} | \alpha_r, \alpha'_r \in Cov^r(X) \right\}$$

and

$$\left\{ H_f^n(N_{\alpha_r}, N_{\widetilde{\alpha}_r}; H), \pi_{\alpha'_r}^{\alpha_r*} | \alpha_r, \alpha'_r \in Cov^r(X) \right\}.$$

Let denote their limiting groups as $H_n^{\text{inf}}(X, A; G)$ and $H_f^n(X, A; H)$ and name them as n - dimensional spectral homological and cohomological Chogoshvili groups of second family of the pair $(X, A) \in LP_2$ over the groups of coefficients G and H , based on infinite chains and finite cochains, respectively.

It has been proved that H_*^{inf} is a semi-exact homology theory, while H_f^* satisfies all the Eilenberg-Steenrod axioms for cohomology theory. If $(X, A) \in LP_2$, the group G is compact and $G|H$, then the above constructed homology and cohomology groups are dual, i.e. $H_n^{\text{inf}}(X, A; G) | H_f^n(X, A; H)$, $n \in \mathbb{Z}$.

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