On cohomological properties of remainders

Vladimer Baladze[1]

vbaladze@gmail.com

In the paper are studied cohomological properties of remainders of Stone–Čech compactifications. Let $H^n_{\infty,f}(X,A;G)$ be the n-dimensional border cohomology group of closed pair (X,A) of normal spaces with coefficients in Abelian group G based on the set of all extendable fringes of normal space X [1].

The border cohomological dimension $d^{\infty}_f(X;G)$ is defined to be the smallest integer n such that, whenever $m \geq n$ and A is a closed subset in X, then the homomorphism $i^* : H^n_{\infty,f}(X;G) \to H^n_{\infty,f}(A;G)$, induced by the inclusion $i : A \to X$, is onto.

Let $H^n_f(X,A;G)$ be the n-dimensional Čech cohomology group of closed pair of normal spaces and let $d_f(X;G)$ be the cohomological dimension of normal space X [2].

Theorem *Let A be a closed subset of metrizable space X. Then*

$$H^n_f(\beta X \backslash X, \beta A \backslash A; G) = H^n_{\infty,f}(X,A;G),$$

$$d^{\infty}_f(X;G) \leq d_f(\beta X \backslash X; G).$$

Remark Such type result also is true for Čech complete spaces and spaces with bicompact axiom of countability [1].

[1] Y. M. Smirnov, *On the dimension of increments of bicompact extensions of proximity spaces and topological spaces*, Mat. Sb. (N.S.) (1966), 141–160

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