

On a generalization of the selection theorem for \mathcal{C} -spaces

Dzmitry Kazhamiakin

`dzmitry_kazhamiakin@icloud.com`

We obtain a new proof of the Uspenskij selection theorem for \mathcal{C} -spaces. The new proof based on Ostrand's colored dimension theorem and uses notion of striped multivalued selections. This result allows us to generalize the Uspenskij theorem to stratified \mathcal{C} -spaces.

Definition. A multivalued map $G: X \rightsquigarrow Y$ is called \mathcal{U} -continuous if $\{x \in X \mid L \subset G(x)\}$ is open for all compact $L \subset Y$.

Theorem. Let X be a paracompact Hausdorff \mathcal{C} -space with closed n -dimensional subspace $X_0 \subset X$, and let Y be a Hausdorff space. Suppose $X \setminus X_0$ is a paracompact \mathcal{C} -space, and $G: X \rightsquigarrow Y$ is a \mathcal{U} -continuous multivalued map. If $G(x) \in C^{n-1}$ for all $x \in X_0$, and $G(x) \in C^\infty$ for all $x \in X \setminus X_0$, then there exists a selection $s: X \rightarrow Y$ of map G .

Suppose $X_0 = \emptyset$, then we get classical Uspenskij theorem.