2018 International Conference on Topology and its Applications,

July 7-11, 2018, Nafpaktos, Greece

ABSTRACTS

Department of Mathematics,
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[4] J.C. Gómez-Larrañaga, F. González-Acuña, Wolfgang Heil, *2-stratifold groups have solvable Word Problem*, Revista de la Real Academia de Ciencias Exactas, Fisicas y Naturales. Serie A. Matematicas, Online First Articles ISSN: 1578-7303 (Print) 1579-1505 (Online).

[5] J.C. Gómez-Larrañaga, F. González-Acuña, Wolfgang Heil, *2-stratifold spines of closed 3-manifolds*, arXiv:1707.05663 (2017).

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On dense subsets and projections of Tychonoff products

Mathematics Subject Classification (MSC): 54A25, 54B10

Abstract. By well known Hewitt – Marczewski – Pondiczery theorem, the Tychonoff product $\prod\limits_{\alpha\in 2^\omega} X_\alpha$ of 2^ω many separable spaces is separable.

We consider the problem of the existence in the Tychonoff product of 2^ω many separable spaces a dense countable subset, which contains no nontrivial convergent in the product sequences.

In 1970 year W.H.Priestley proved that such countable dense set existsts in I^{2^ω}, where I is closed unit interval.

In 1978 year P.Simon proved that such countable dense set existsts in D^{2^ω}, where D is a two-point discrete space. He proved that in D^{2^ω} there is a countable dense set such that the closure of every countable subset of it has a cardinality 2^{2^ω}.

In 2017 year we proved that that such countable dense set existsts in Z^{2^ω}, where Z is a countable discrete space. We proved that in Z^{2^ω} there is a countable dense set such that every countable subset of Q contains a countable discrete in Z^{2^ω} subset.

Now we prove that such countable dense set exists in the general case of the product $\prod\limits_{\alpha\in 2^\omega} Z_\alpha$ of not one-point Hausdorff separable spaces.

In fact we prove that in $\prod_{\alpha\in 2^\omega} Z_\alpha$ there is a countable dense set $Q \subseteq \prod_{\alpha\in 2^\omega} Z_\alpha$ such that for every countable subset $S \subseteq Q$ a set $\pi_A(S)$ is dense in a face $\prod_{\alpha\in A} Z_\alpha$ for some A, $|A| = \omega$.

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Classification of Continuous Function spaces on ordinals

Mathematics Subject Classification (MSC): 54C35, 46E10

Abstract. The topological classification of the spaces $C_p[1, \alpha]$ is devoted to the Gorak's paper [1], in which the question of the homeomorphism of the spaces $C_p[1, \alpha]$ and $C_p[1, \beta]$ is solved for all ordinals α and β with the exception of the case $\alpha = k^+ \cdot k$, $\beta = k^+ \cdot k^+$, where k is the initial ordinal, and k^+ is the smallest initial ordinal greater than k.

Theorem 1. *Let τ be an arbitrary initial regular ordinal, σ and λ be initial ordinals satisfying the inequality $\omega \leqslant \sigma < \lambda \leqslant \tau$. Then the space $C_p[1, \tau \cdot \sigma]$ is not homeomorphic to the space $C_p[1, \tau \cdot \lambda]$.*

If we combine this result with the results of [1], we get a complete topological classification of the spaces $C_p[1, \alpha]$ (which coincides with the uniform classification). We can write it in the form of the following theorem.

Theorem 2. *Let α and β be ordinals and $\alpha \leq \beta$.*

(a) *If $|\alpha| \neq |\beta|$, then $C_p[1, \alpha]$ and $C_p[1, \beta]$ are not homeomorphic.*

(b) *If τ is an initial ordinal, $|\alpha| = |\beta| = \tau$ and either $\tau = \omega$ or τ is a singular ordinal or $\beta \geq \alpha \geq \tau^2$, then the spaces $C_p[1, \alpha]$ and $C_p[1, \beta]$ are (uniformly) homeomorphic.*

(c) *if τ is a regular uncountable ordinal and $\alpha, \beta \in [\tau, \tau^2]$, then the space $C_p[1, \alpha]$ is (uniformly) homeomorphic to the space $C_p[1, \beta]$ if and only if*