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A study of universal elements in classes of bases of topological spaces

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Abstract: The universality problem focuses on finding universal spaces in classes of topological spaces. Moreover, in “Universal spaces and mappings” by S. D. Iliadis (2005), an important method of constructing such universal elements in classes of spaces is introduced and explained in details. Simultaneously, in “A topological dimension greater than or equal to the classical covering dimension” by D. N. Georgiou, A. C. Megaritis and F. Sereti (2017), new topological dimension is introduced and studied, which is called quasi covering dimension and is denoted by \dim_q . In this paper, we define the base dimension-like function of the type \dim_q , denoted by $b\text{-dim}_q^{\text{IF}}$, and study the property of universality for this function. Especially, based on the method of “Universal spaces and mappings” by S. D. Iliadis (2005), we prove that in classes of bases which are determined by $b\text{-dim}_q^{\text{IF}}$ there exist universal elements.

Keywords: topological dimension; universality property; quasi covering dimension

AMS Subject Classification: 54F45

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