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Dimensional compactness in biequivalence vector spaces

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Abstract: The notion of dimensionally compact class in a biequivalence vector space is introduced. Similarly as the notion of compactness with respect to a π -equivalence reflects our nonability to grasp any infinite set under sharp distinction of its elements, the notion of dimensional compactness is related to the fact that we are not able to measure out any infinite set of independent parameters. A fairly natural Galois connection between equivalences on an infinite set s and classes of set functions $s \rightarrow Q$ is investigated. Finally, a direct connection between compactness of a π -equivalence $R \subseteq s^2$ and dimensional compactness of the class $\mathbf{C}[R]$ of all continuous set functions from $\langle s, R \rangle$ to $\langle Q, \dot{=} \rangle$ is established.

Keywords: alternative set theory, biequivalence vector space, π -equivalence, continuous function, set uniform equivalence, compact, dimensionally compact

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