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Biequivalence vector spaces in the alternative set theory

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Abstract: As a counterpart to classical topological vector spaces in the alternative set theory, biequivalence vector spaces (over the field Q of all rational numbers) are introduced and their basic properties are listed. A methodological consequence opening a new view towards the relationship between the algebraic and topological dual is quoted. The existence of various types of valuations on a biequivalence vector space inducing its biequivalence is proved. Normability is characterized in terms of total convexity of the monad and/or of the galaxy of 0. Finally, the existence of a rather strong type of basis for a fairly extensive area of biequivalence vector spaces, containing all the most important particular cases, is established.

Keywords: alternative set theory, biequivalence, vector space, monad, galaxy, symmetric Sd-closure, dual, valuation, norm, convex, basis
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