

Orthogonal decomposition of the Gaussian measure

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Abstract

© 2016, Pleiades Publishing, Ltd. The ultrapower of real line, \mathbb{R}_U , where U is a nontrivial ultrafilter in the set \mathbb{N} of natural integers, is some realizations of the “non-standard expansion” ${}^*\mathbb{R}$ of the set of real numbers. Due to “good” properties of the factorization of cartesian product with respect to ultrafilter, ultraproducts hold a number of considerable value properties from the algebraic point of view. At the same time it is not any good “natural” (i.e. determined by the topology of factors) topology. In this article some properties of the Gaussian measure defined on ultraproduct of linear measurable spaces are investigated. In particular, we will give an example of a Gaussian not extreme measure. It will be defined on the linear measurable space which doesn't have any topological structure. For the proof of many statements of the work the technics of the ultraproducts developed in work [1] is used.

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Keywords

Gaussian measure, Linear measurable space, Ultraproducts