TRUDY INSTITUTA MATEMATIKI I MEKHANIKI UrO RAN

Vol. 22 No. 2 **2016**

MSC: 54D65, 49J52, 90C56, 32T27

DOI: 10.21538/0134-4889-2016-22-2-277-291

THEOREMS ON THE SEPARABILITY OF α-SETS IN EUCLIDEAN SPACE

Received December 10, 2016

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We study α-sets in Euclidean space $\mathbb{R}^n$. The notion of α-set is introduced as a generalization of a convex closed set in $\mathbb{R}^n$. This notion appeared in the study of reachable sets and integral funnels of nonlinear control systems in Euclidean spaces. Reachable sets of nonlinear dynamic systems are usually nonconvex, and the degree of their nonconvexity is different in different systems. This circumstance prompted the introduction of a classification of sets in $\mathbb{R}^n$ according to the degree of their nonconvexity. Such a classification stems from control theory and is presented here as the notion of α-set in $\mathbb{R}^n$.

Keywords: α-set, convex set in $\mathbb{R}^n$, convex hull in $\mathbb{R}^n$, α-hyperplane, α-separability, Bouligand cone, normal cone.

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Cite this article as:
V. N. Ushakov, A. A. Uspenskii. Theorems on the separability of α-sets in Euclidean space, *Trudy Inst. Mat. Mekh. UrO RAN*, 2016, vol. 22, no. 2, pp. 277–291.