ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

13. Combinatorics

1991 MS Classification: 18
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Properties of combinatorial set images into the arithmatic Euclidean spaces

Let there be a combinatorial set A consisting of elements $\pi = (\pi_1, \pi_{2,}..., \pi_n)$.

Definition. Combinatorial set A is called Euclidean combinatorial set if different elements π^i and π^j of A have various sequence order of their components [1] i. e. elements of the Euclidean combinatorial set are ordered collection of n components.

Thus for example sets of permutations, k-permutations, ordered partitions are Euclidean combinatorial sets and a set of combinations is not such set. To each element $\pi \in A$ there sets up in the one-to-one correspondence a point $x = (x_1, x_2, ...x_n) \in R^n$ (Euclidean arithmetical space of n dimensions) as follows $x = f(\pi), \quad x_i = \pi_i, \quad i = 1, 2, ..., n$, if π_i, $(i = 1, 2, ..., n)$, are some numbers. It means the set A is immersed in the space R^n as result of the mapping f , i. e. the set $E = f(A) \subset R^n$. After such immersion of the set A into R^n the set E obtained possesses a number of properties which may be utilized to solve optimization combinatorial problems. The properties are considered in detailes.

References.

1. Stoyan Yu. G. On some mapping of combinatorial sets into Euclidean arithmetic space. - Kharkov 1982. Pages 33 (Preprint AS USSR. Institute for Problems in Machinery), Russ.