Summary

ON CERTAIN DECOMPOSITION SETS OF THE PLANE

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The paper is concerned with the decompositions $\boldsymbol{R}$ of the euclidean plane E_2 into the sets congruent with a given subset N of the straight line l, when $\mathfrak{m} = \operatorname{card}(l - N) < 2^{\aleph_0}$. When such a decomposition exists, we say that N is a decomposition set of E_2.

Let $\mathfrak{N}$ be the set of the straigt lines, in which elements of $\boldsymbol{R}$ are contained. It is proved, that $\mathfrak{N}$ consists of two subsets $\mathfrak{N}_1$, $\mathfrak{N}_2$, one of which consists of all straight lines parallel to a given direction, the other contains exactly $\mathfrak{m}$ straight lines parallel to another direction (theorem 1).

In theorem 2 we prove that the following condition is necesary for N being a decomposition set of E_2:

If ξ is a point of $l - N$, there exists a translation τ of l such that $\tau(l - N) \subset \subset l - N$, ξ non $\in \tau(l - N)$. In the case $\mathfrak{m} = \aleph_0$ this condition is sufficient, but this is not the case for $\mathfrak{m} > \aleph_0$.