

# Upgrading the axiomatic system to $n$ -dimensional space

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There are three ways to approach the Euclidean geometry of four or more dimensions: axiomatic, algebraic (or analytical), and intuitive. Of course, only the first two can be formalized. While the algebraic method is well developed, that is not the case with the axiomatic. The terms as “hyperplane”, “hyperspace”, “ $n$ -flat” were used even in 1929 by Sommerville. Also, he described incidence relations between them. But, there is still no precise axiomatic system describing  $n$ -dimensional space.

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