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CONVEX REGULAR-FACED POLYHEDRA INDECOMPOSABLE BY ANY PLANE TO REGULAR-FACED POLYHEDRA

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A convex polyhedron with regular faces or with faces decomposable by two regular polygons is called indecomposable if any section plane dissects this polyhedron into two parts so that at least one of the faces of these two parts is an irregular polygon. In this article, the precise values of coordinates of vertices of such indecomposable convex polyhedra are calculated in the case when some of the faces consist of two regular polygons. The algebraic models of other indecomposable polyhedra are already constructed. So, for any indecomposable convex polyhedron, we give here the explicit values of the coordinates of such vertices and describe such isometries of the space, that the collection of orbits of these vertices under action of the group generated by these isometries coincides with the set of all vertices of this polyhedron.

This description provides a short proof of existence of any of such indecomposable polyhedra and some other applications.

Key words and phrases: convex polyhedra, group of isometries, regular faces, computer algebra.

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