

Hereditary polyhedra with planar regular faces*

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In memory of Norman Johnson, our friend and colleague.

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Abstract

A skeletal polyhedron in Euclidean 3-space is called hereditary if the symmetries of each face extend to symmetries of the entire polyhedron. In this paper we describe the finite hereditary skeletal polyhedra which have regular convex polygons or regular star-polygons as faces.

Keywords: Symmetries of polyhedra, geometric polyhedra, uniform polyhedra.

Math. Subj. Class.: 51M20, 52B05, 52B22

*Special thanks go to Peter McMullen for pointing out the omission of a known uniform polyhedron from the list in an earlier version of the manuscript. We did know about the polyhedron but a bit of absentmindedness had caused us to forget to include it. His forthcoming paper [13] will describe an alternative approach to the enumeration presented here, and will also deal with the case of skew faces. We would also like to thank Tomáš Pisanský and the anonymous referee for helpful comments which have improved the paper.


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Hereditarni poliedri z ravninskimi pravilnimi lici*

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V spomin Normanu Johnsonu, najinemu prijatelju in kolegu.

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Povzetek

Skeletni polieder v evklidskem 3-prostoru se imenuje hereditaren, če se simetrije vsakega lica razširijo do simetrij celotnega poliedra. V tem članku opišemo končne hereditarne skeletne poliedre, katerih lica so pravilni konveksni mnogokotniki ali pravilni zvezdasti mnogokotniki.

Ključne besede: Simetrije poliedrov, geometrijski poliedri, uniformni poliedri.

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