Hartley, Michael I.

An exploration of locally projective polytopes.  (English)  Zbl 1174.51009


Summary: This article completes the classification of finite universal locally projective regular abstract polytopes, by summarizing (with careful references) previously published results on the topic, and resolving the few cases that do not appear in the literature. In rank 4, all quotients of locally projective polytopes are also noted. In addition, the article almost completes the classification of the infinite universal locally projective polytopes, except for \{5, 3, 3\}_15 and its dual. It is shown that this polytope cannot be finite, but its existence is not established. The most remarkable feature of the classification is that a non-degenerate universal locally projective polytope \(\mathcal{P}\) is infinite if and only if the rank of \(\mathcal{P}\) is 5 and the facets of \(\mathcal{P}\) or its dual are the hemi-120-cell \{5, 3, 3\}_15.

MSC:

- 51M20  Polyhedra and polytopes; regular figures, division of spaces
- 52B15  Symmetry properties of polytopes

Keywords:

locally projective polytopes

Software:

GAP

Full Text: DOI

References:

1–237.


This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.