

Two atlases of abstract chiral polytopes for small groups

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Abstract

We construct chiral abstract polytopes in two different ways. Firstly we seek them as quotients of regular polytopes arising from the Atlas of Small Regular Polytopes (<http://www.abstract-polytopes.com/atlas/>); the resulting atlas of chiral polytopes is available on the website <http://www.abstract-polytopes.com/chiral/>. Secondly, for each almost simple group Γ such that $S \leq \Gamma \leq \text{Aut}(S)$ where S is a simple group and Γ is a group of order less than 900,000 listed in the Atlas of Finite Groups, we give, up to isomorphism, the number of abstract chiral polytopes on which Γ acts regularly. The results have been obtained using a series of Magma programs. All these polytopes are made available on the third author's website, at <http://math.auckland.ac.nz/~dleemans/CHIRAL/>.

Povzetek

Na dva različna načina konstruiramo kiralne abstraktne politope. Kot prvo jih poiščemo kot kvociente regularnih politopov, ki izhajajo iz atlasa majhnih regularnih politopov (<http://www.abstract-polytopes.com/atlas/>); atlas kiralnih politopov, ki ga dobimo na ta način, je dostopen na spletni strani <http://www.abstract-polytopes.com/chiral/>. Kot drugo, za vsako tako skoraj enostavno grupo Γ , da je $S \leq \Gamma \leq \text{Aut}(S)$, kjer je S enostavna grupa ter je Γ neka grupa reda, ki je manjši od 900,000, in je navedena v Atlasu končnih grup, podamo do izomorfizma natančno število abstraktnih kiralnih politopov, na katerih grupa Γ deluje regularno. Do rezultata pridemo z uporabo programa Magma. Vsi ti politopi so dostopni na spletni strani tretjega avtorja tega članka: <http://math.auckland.ac.nz/~dleemans/CHIRAL/>.