Chiral abstract polytopes are those whose automorphism groups have two orbits on flags, with adjacent flags in different orbits. They were first studied by Schulte and Weiss, and for some time the only finite known examples had ranks 3 and 4. Conder, Hubard, and Pisanski constructed examples of rank 5, and later Conder and Devillers constructed finite examples of ranks 6, 7, and 8. At the same time, Pellicer proved the existence of finite chiral polytopes of any rank at least 3.

Some progress has now been made in the construction of finite abstract chiral polytopes with known automorphism groups. We have proved that for all but finitely many $n$, both $A_n$ and $S_n$ are automorphism groups of chiral 4-polytopes with tetrahedral facets, and are extending this result to larger ranks. (Received September 22, 2015)