1176-06-152 **Marston D E Conder*** (m.conder@auckland.ac.nz), University of Auckland, New Zealand.

Chiral polytopes with soluble automorphism group.

Regular abstract polytopes are relatively well understood and easy to construct. In contrast, chiral polytopes (which admit no reflections but have maximal symmetry by rotation) are much more challenging. In fact it became known only about 12 years ago that chiral polytopes of rank d exist for all $d \geq 3$. Even now, relative few infinite families of examples of chiral polytopes are known for ranks 4 and higher. Furthermore, many constructions involve simple or almost-simple groups, and yet the vast majority of regular and chiral polytopes of small order have a *soluble* automorphism group.

In this talk I will explain how to construct two infinite families of locally toroidal chiral 4-polytopes of type $\{4, 4, 4\}$, with members of these families having soluble automorphism groups of orders $1024m^2$ and $2048m^2$ for every positive integer m, respectively. Note that these are 2-groups when m is a power of 2.

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