1046-52-1257 **Jim Lawrence*** (lawrence@gmu.edu), Department of Mathematical Sciences, George Mason University, Fairfax, VA 22030. *Convex polytopes with abelian vertex-transitive symmetry.* Preliminary report.

In studying families of mathematical objects, it is often useful to single out those having a lot of symmetry in the hope that, for these, the analysis will be made less difficult by use of the symmetry. For convex polytopes, such a simplifying assumption might be that the polytope has a vertex-transitive group of symmetries. It is curious that such polytopes having more complicated groups of symmetries are often easier to study than those having, say, abelian groups of symmetries. We consider the problem of classifying the convex polytopes P for which there is an abelian group of linear symmetries acting transitively on the set of vertices. We consider in particular the case of 4-dimensional polytopes, an investigation fruitfully begun by Z. Smilansky. Here, there is an interesting connection between the combinatorial type of the polytope and continued fractions. This is joint work with T. Bisztriczky. (Received September 15, 2008)