1098-11-299 **Robert Erdahl*** (robert.erdahl@queensu.ca), Department of Mathematics, Queen's University, Kingston, Ontario K7L 3N6, Canada. *Parity centres and dual lattice polytopes for parallelohedra.* Preliminary report.

If a d-dimensional polytope P has the property that a selection of translates fit together facet-to-facet to tile space, then P is called a parallelohedron. We use the notation T(P) to denote such tilings by parallelohedra. In such cases P must be centrally symmetric, and the centers of the tiles form a lattice L(P). If two tiles touch, the midpoint of the lattice vector between centers lies on the boundary of both. We will refer to such points on the boundary of P, and on the boundary of all other tiles in T(P), as parity centers. The tiling T(P) is invariant with respect to inversion through all such parity centers.

Associated with the tiling T(P) is a dual tiling D(P) that I will define during the course of my lecture. There are many open questions regarding the structure of this tiling that are currently under investigation, but some very basic facts are known: It is known that the cells of this tiling are convex lattice polytopes, and that the dual tiling D(P) is invariant with respect to inversion through all parity centers. Using these basic features I will show how all 4-dimensional dual lattice polytopes can be enumerated. (Received January 28, 2014)