1135-05-2093   **Shira Viel*** (`shira_viel@ncsu.edu`), North Carolina State University, Department of
Mathematics, Box 8205, Raleigh, NC 27695. *Surfaces, orbifolds, and dominance.* Preliminary
report.

The associahedron is a well-known n-dimensional polytope whose vertices are labeled by triangulations of an $(n+3)$-gon with edges given by diagonal flips. The cyclohedron is defined analogously using centrally-symmetric triangulations of a $(2n+2)$-gon, or, modding out by the symmetry, triangulations of an $(n+1)$-gon with a single two-fold branch point in the center. The polytopes can be realized in such a way that their normal fans are the "**g**-vector fans" or "mutation fans" for certain cluster algebras, and the normal fan of the cyclohedron refines that of the associahedron. In this talk, we will justify and generalize this mutation fan refinement relationship as a consequence of a simple combinatorial operation which maps the $(n+1)$-gon with one "orbifold point" to the $(n+3)$-gon and more generally maps a triangulated orbifold to a triangulated surface while preserving the number of diagonals and respecting adjacencies. This induces a relationship between the signed adjacency matrices associated to the triangulations, called dominance, which gives rise to many interesting phenomena which we will discuss as time permits. (Received September 25, 2017)