# THEORY OF TORIC VARIETIES FROM THE TOPOLOGICAL VIEWPOINT

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A *toric variety* of complex dimension $n$ is a normal complex algebraic variety with $(\mathbb{C}^*)^n$-action having a dense orbit and its geometry is closely related to combinatorics. In fact, a fundamental result in the theory of toric varieties says that there is a one-to-one correspondence between toric varieties and combinatorical objects called *fans*. Moreover, projective toric orbifolds provide convex polytopes through moment maps. In short, the theory of toric varieties can be thought of as a bridge connecting algebraic geometry and combinatorics. An interesting thing is that one can obtain results in combinatorics by applying results in algebraic geometry and vice versa. For instance, Stanley proved the so-called *g-theorem* on the face numbers of a simple (or simplicial) convex polytope by applying the hard Lefschetz theorem to the projective toric orbifold associated with the polytope.

In this talk I claim that the theory of toric varieties can be developed in topological category, i.e., there is a bridge connecting topology and combinatorics.

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