On classification of locally standard torus manifolds up to equivariant diffeomorphism

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A *torus manifold* M is an even dimensional, compact, oriented, smooth manifold with half dimensional effective torus action. We call M a *locally standard* if its torus action locally looks like the standard torus T^n-action on $\mathbb{C}^n$. (Quasi)toric manifolds or more generally topological toric manifolds are locally standard torus manifolds.

Due to the result of Davis and Januszkiewicz, quasitoric manifolds are classified by simple convex polytopes with characteristic functions up to equivariant homeomorphism. Wiemeler improves the part of "equivariant homeomorphism" to "equivariant diffeomorphism" (Davis also states this fact recently). In this talk, I would like to introduce a generalization of this classification theorem to the classification of locally standard torus manifolds up to equivariant diffeomorphism. This is a joint (progress) work with Yael Karshon.

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