

Convex Polytopes and Quasilattices from the Symplectic Viewpoint

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Abstract

We construct, for each convex polytope, possibly nonrational and nonsimple, a family of compact spaces that are stratified by quasifolds, i.e. each of these spaces is a collection of quasifolds glued together in a suitable way. A quasifold is a space locally modelled on \mathbb{R}^k modulo the action of a discrete, possibly infinite, group. The way strata are glued to each other also involves the action of an (infinite) discrete group. Each stratified space is endowed with a symplectic structure and a moment mapping having the property that its image gives the original polytope back. These spaces may be viewed as a natural generalization of symplectic toric varieties to the nonrational setting.

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