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On Arnold's Problem on the Classifications of Convex Lattice Polytopes

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In 1980, V.I. Arnold studied the classification problem for convex lattice polygons of given area. Since then this problem and its analogues have been studied by B'ar'any, Pach, Vershik, Liu, Zong and others. Upper bounds for the numbers of non-equivalent ddimensional convex lattice polytopes of given volume or cardinality have been achieved. In this paper, by introducing and studying the unimodular groups acting on convex lattice polytopes, we obtain lower bounds for the number of non-equivalent d-dimensional convex lattice polytopes of bounded volume or given cardinality, which are essentially tight.

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