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Anthony W Harrison* (aharri60@kent.edu). *Computing the lattice size.*

Let P be a lattice polygon. The lattice size of P with respect to the standard 2-simplex Σ , denoted $\text{ls}_\Sigma(P)$, is the smallest number ℓ such that the image of P under an affine unimodular transformation is contained within the ℓ -dilate of Σ . This parameter can be used to answer questions about toric varieties. Castryck, Cools, and Schicho showed that there is a recursive algorithm to determine the lattice size by relating $\text{ls}(P)$ to the lattice size of the convex hull of the interior lattice points of P . We have developed a new algorithm that needs only the vertices of P and so avoids the computational expense of determining the interior lattice points. We show that if a fixed, finite set of transformations does not yield a “smaller” image of P , then a translate of P fits in the smallest possible dilate of Σ . (Received September 26, 2017)