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Ilya Scheidwasser* (scheidwasser.i@husky.neu.edu). *Contractions of Polygons in Abstract Polytopes*.

Several well-known constructions exist on abstract polytopes, such as the pyramid and prism constructions. After a brief introduction to abstract polytopes, we present two new local constructions. The first construction, called digonal contraction, allows digonal sections to be removed by merging their two edges into a single edge. The second construction, called polygonal contraction, allows polygonal sections with at least four vertices to be converted to two smaller polygons by merging two non-adjacent vertices. Neither of these contractions can be applied arbitrarily. In the case of digonal contraction, we have necessary and sufficient conditions for its use. In the case of polygonal contraction, we have necessary and sufficient conditions for its use given an assumption on the polygon, and we have necessary conditions for its use in general. We investigate when these contractions can be applied, and how polygonal contraction can be applied on a somewhat global scale in order to preserve some symmetries of the original polytope. (Received November 22, 2014)