1107-52-438   **Carl W. Lee*** (`lee@uky.edu`), Department of Mathematics, 715 Patterson Office Tower, University of Kentucky, Lexington, KY 40506, and **Clifford Taylor**. *A Generalization of the Secondary Polytope Induced by Lifting and Deleting.* Preliminary report.

Given a finite set Q of points in $\mathbf{R}^d$, a regular subdivision of conv Q is formed by taking the convex hull of a lifting of Q into $\mathbf{R}^{d+1}$ and projecting the lower hull back into $\mathbf{R}^d$. It is well known that the poset of regular subdivisions of Q, ordered by refinement, is isomorphic to the face lattice of a convex polytope, the secondary polytope of Q, and that the coordinates of the vertices of this polytope are given by the characteristic vectors defined by Ge'lfand, Kapranov, and Zelevinsky, computed in a simple way from the volumes of the maximal simplices in the corresponding regular triangulations. We generalize some of these results by fixing an integer $0 \leq k \leq |Q|$, and for each lifting of Q considering the family of subdivisions obtained by deleting in turn each of the subsets of Q of size k. Associated with each k will be a polytope with each vertex corresponding to the family of triangulations derived from a lifting. Coordinates of each vertex can be obtained by summing the characteristic vectors of the triangulations in its family. In the simple case of n points on a line and $k = 1$ we can enumerate vertices and edges of these polytopes. (Received January 20, 2015)