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Michael A. Jackson* (majackson@gcc.edu). *Partitioning Polytope Number Sequences into Simplex Number Sequences.*

The polytope number sequence for a given polytope is an integer sequence defined by the combinatorics of the polytope. Polytope number sequences are a type of figurate number sequence and recent work by H. K. Kim and J. Y. Lee has focused on writing polytope number sequences as sums of simplex number sequences. In addition, this work has given a process for writing the polytope number sequence in a recursive fashion by using the interior sequences for the various k -faces of the polytope, each viewed as a k -dimensional polytope. We show that the polytope number sequence for any convex polytope can be written as a linear combination of simplex numbers in the same dimension with non-negative coefficients. This result arises from using a pointed triangulation of the polytope which is partitionable and then realizing the coefficients as the h -vector of the resulting polytopal complex. In addition, we show that the corresponding interior polytope number sequence is the linear combination of interior simplex number sequences with the same coefficients appearing in the opposite order. (Received September 21, 2015)