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### The Acyclotope and Hyperplanes of a Graph

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#### Abstract for the Combinatorics Seminar 2015 May 8 (Note special day)

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The acyclotope of a graph  $G$  can be defined as the convex hull of the net degree vectors (indegree – outdegree) of all acyclic orientations of  $G$ , or as the Minkowski sum of line segments representing  $G$ . (Thus, it is a zonotope; Postnikov calls it the “graphical zonotope”. The line segments are dual to the hyperplanes of the graphic arrangement of  $G$ .) I introduced the acyclotope (or at least the name) about 37 1/2 years ago in connection with signed graphs. It was perhaps inspired by the score vectors of tournaments, which are a special case that is closely related to the permutahedron. I will discuss its notable properties.

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