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**Michael G. Dobbins** and **Florian Frick\*** ([frick@cmu.edu](mailto:frick@cmu.edu)). *Barycenters of points in polytope skeleta.*

If the origin is in the convex hull of some set  $X$  in  $\mathbb{R}^d$ , then it is in the convex hull of  $d + 1$  vectors in  $X$ . One can ask for similar estimates on the number of vectors, where now the origin is supposed to be the barycenter of the set of vectors. For this balancing problem, the set  $X$  needs some additional structure. I will address this problem for the case that  $X$  is a skeleton of a polytope. (Received September 06, 2019)