On Permuting some Coordinates of Polytopes

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Abstract

Motivated by a result of Kaibel and Pashkovich, We study the change in extension complexity of a polytope when some of its coordinates are permuted in all possible ways, or when some of its coordinate values are "sorted" for each of its vertices. We show that the extension complexity can increase exponentially in each case even if every coordinate contains only three values 0,1, or 2, for each vertex. We also discuss the implications of the 0/1 case.

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