

## Extremal non-central sections of the simplex and the cube

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We determine the maximal non-central hyperplane sections of the regular  $n$ -simplex, if the distance of the hyperplane to the centroid is relatively large, i.e. larger than the distance of the centroid to the midpoints of its edges. The maximal hyperplane sections are perpendicular to the vectors from the centroid to the vertices.

For smaller distances to the centroid we show that these hyperplane sections are at least locally extremal.

We also study extremal perimeters of these sections, i.e. sections of the hyperplane with the boundary of the simplex.

Further, we discuss what is known about the corresponding questions for the  $n$ -cube.