Geometric inequalities for subsets of the boundary of a cube

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(joint work with A. Cerdán and C. Miori)

In 2003 Cotton et al. gave a complete solution of the isoperimetric problem for sets in the boundary of the 3-dimensional cube; they characterized the least-perimeter enclosures of a prescribed area of these sets. In this communication we consider the intrinsic distance in the boundary of the 3-dimensional cube, and the corresponding diameter; we present some results and open questions comparing the diameter of a subset with the area enclosed and also the diameter with the perimeter. Some of the these results extend to any dimension.