Optimal divisions of a convex body

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For a convex body C in $\mathbb{R}^n$ and a given division of C into $C_1, \ldots, C_n$ convex subsets, we can consider

$$(1) \qquad \text{máx}\{F(C_1), \ldots, F(C_n)\} \quad (\text{respectively, } \text{mín}\{F(C_1), \ldots, F(C_n)\}),$$

where F represents one of these classical geometric functionals: the diameter, the width, the inradius and the circumradius. In some sense, the value defined by (1) provides a measure of the *quality* of the division.

In this talk we will study the divisions of C *minimizing* (respectively, *maximizing*) the value (1). In particular, we will treat the existence of optimal divisions, bounds for the corresponding optimal values, and algorithms leading to these optimal divisions.

This is part of a joint work with Isabel Fernández and Alberto Márquez (Universidad de Sevilla).