Isoperimetric inequality and related problems

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Let Γ be a simple closed curve in the Euclidean plane and Ω is the interior of Γ. If L is the length of Γ and A is the area of Ω, then the isoperimetric inequality states that

$$4\pi A \leq L^2. \tag{1}$$

Equality holds in (1) if and only if Γ is a circle.

There are many proofs and many generalizations of inequality (1).

Here, we discuss the isoperimetric-type inequalities for subharmonic functions on the polydisk, capacity, the transportation approach and related problems. In particular, we consider new approaches to the exact estimate of the isoperimetric coefficient in the plane and the space (for a review of the subject, see [1]).

[1] Mateljević M. Isoperimetric-type inequalities for subharmonic functions on the polydisk, capacity, transportation approach, and related problems. Filomat. 2015; 29(2): 275-302.