Among all curves $\gamma$ in the closed unit disc that meet every radius, there is one, $\gamma_0$, whose harmonic measure $c_0$ at the origin is minimal. The authors give an explicit description of $\gamma_0$ and show that $c_0$ is equal to the harmonic measure at the center of a $1:3$ rectangle for the two long sides. They also give a quadratically convergent algorithm to compute the harmonic measure of one side (or two sides) of a rectangle. Extremal length and conformal mappings are used to determine the optimal curve $\gamma_0$.

Finally it is shown, that if the hypothesis that $\gamma$ is connected is removed, the constant $c_0$ is no longer the lower bound for the harmonic measure at the origin.

Reviewer: J. Weisel

MSC:
- 30C85 Capacity and harmonic measure in the complex plane
- 31A15 Potentials and capacity, harmonic measure, extremal length and related notions in two dimensions
- 30C30 Schwarz-Christoffel-type mappings
- 30C70 Extremal problems for conformal and quasiconformal mappings, variational methods

Keywords:
- harmonic measure
- Extremal length

Full Text: DOI

References:
[10] B. J. Maitland, A note on functions regular and bounded in the unit circle and small at a set of points near the circumference of the circle, Proc. Cambridge Philos. Soc. 35 (1939), 382 – 388. - Zbl 0021.24001

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