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The planar least gradient problem in convex domains, the case of continuous datum.
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Summary: We study the two dimensional least gradient problem in a convex polygonal set in the plane. We show existence of solutions when the boundary data are attained in the trace sense. Due to the lack of strict convexity, the classical results are not applicable. We state the admissibility conditions on the continuous boundary datum \( f \) that are sufficient for establishing an existence and uniqueness result. The solutions are constructed by a limiting process, which uses the well-known geometry of superlevel sets of least gradient functions.

MSC:
49J10 Existence theories for free problems in two or more independent variables
49J52 Nonsmooth analysis
49Q10 Optimization of shapes other than minimal surfaces
49Q20 Variational problems in a geometric measure-theoretic setting

Keywords:
least gradient; trace solutions; convex but not strictly convex domains; \( BV \) functions

Full Text: DOI

References:

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