Abstract

The present memoir provides a generalization of the authors' previous work on Bellman functions for integral functionals on BMO. Those Bellman functions are the minimal locally concave functions on parabolic strips in the plane. We describe an algorithm for constructing minimal locally concave functions on a planar domain that is a difference of two unbounded convex domains. This leads to many sharp estimates for functions in classes such as BMO, A_p, or the Gehring classes.

Keywords. Bellman function, extremal problems, sharp inequalities, bounded mean oscillation, Muckenhoupt classes, Gehring classes

Mathematics Subject Classification (2020): 42B35 (primary); 42A05, 26D07, 49K20 (secondary)

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