# On the structure of BV minimizers of linear growth functionals

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**Abstract**

We study the minimization of convex, variational integrals of linear growth, with model functionals

$$\int_\Omega (1+|\nabla u|^p)^{1/p}\,dx$$

for $p \in (1,\infty)$, among all functions in the Sobolev space $W^{1,1}$ with prescribed boundary values. Due to insufficient compactness properties of these Dirichlet classes, it is well-known already for the non-parametric minimal surface problem with $p = 2$ that minimizers might in general not exist. In such cases the functional is extended suitably to the space $BV$ of functions of bounded variation via relaxation, and for the relaxed functional one can in turn guarantee the existence of minimizers. However, in contrast to the original minimization problem, these $BV$ minimizer might in principle have interior jump discontinuities or might not attain the prescribed boundary values. In past years, Sobolev regularity of $BV$ minimizers was established for functionals with a "mild" lack of ellipticity, corresponding to the case $p \leq 2$. After discussing in my talk the formal reason for this limitation, I want to present a structure result for $BV$ minimizers for the remaining cases $p > 2$ and with the restriction to simply connected domains. The results presented in this talk are based on a joined projects with Miroslav Bulíček (Prag), Franz Gmeineder (Bonn), Erika Maringová (Prague/Vienna), and Thomas Schmidt (Hamburg).