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Abstracts

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Sufficient Conditions for hange of Variables in Integral

The talk refers results of joint works with Olli Martio [7], Pekka Koskela, Janne Kauhanen [6], and Irene Fonseca [2]. The topic of change of variables and the role of Luzin's N-property have been thoroughly studied by Professor Yurii Grigor'evich Reshetnyak and others, see [3], [9] and references therein. For some of recent developments see [1] and [8].

A sufficient condition for change of variables via f is the following *n-absolute continuity* condition [5]: for any $\varepsilon > 0$ there exists $\delta > 0$ such that for every disjoint collection $\{B_j\}$ of balls we have

$$\sum (\operatorname{diam} B_j)^n < \delta \Rightarrow \sum \Big(\operatorname{diam} f(B_j)\Big)^n < \varepsilon.$$

This condition is satisfied in the gradient of f belongs to the Lorentz space $\mathrm{L}^{n,1}$ [6]. If ∇f belongs only to L^n, then the N-condition holds except a singular set, which is the set of all points, where f is not approximately Hölder continuous [7], [4]. Now, this result can be generalized to functions in BV, whose absolutely continuous part of gradient is in L^n [2]. The singular set enlarges by points at which the maximal function of the singular part of the gradient of f is infinite.

References

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