Abstract

Primary objective of the thesis is proof of the statement that if for $k \in \mathbb{N}$ a $p \geq 1$ a bilipschitz mapping f belongs to $W^{k+1,p}_{\mathrm{loc}} \cap W^{k,\infty}_{\mathrm{loc}}$ then also its inverse f^{-1} belongs to $W^{k+1,p}_{\mathrm{loc}}$. We prove a similar statement also for spaces BV_{loc} . For this purpose we construct a new ordering of n-th partial derivatives to generalized Jacobian matrix. Thanks to this matrix we are able to differentiate matrices in an applicable way. Generalized Jacobian matrix is projected so that there still holds the Chain rule and, in some way, also rules for matrices product differentiation.