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HAUSDORFF MEASURES AND THE MORSE-SARD THEOREM

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Abstract

Let $F\colon U \subset \mathbb{R}^n \to \mathbb{R}^m$ be a differentiable function and $p < m$ an integer. If $k \geq 1$ is an integer, $\alpha \in [0,1]$ and $F \in C^{k+(\alpha)}$, if we set $C_p(F) = \{x \in U \mid \text{rank}(Df(x)) \leq p\}$ then the Hausdorff measure of dimension $(p + \frac{n-p}{k+\alpha})$ of $F(C_p(F))$ is zero.