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Colin Carroll* (colin.carroll@rice.edu). *Minimizing the Jacobian Integral.*

We discuss minimizers of the integral of the m -Jacobian of maps $u : \mathbb{R}^n \rightarrow \mathbb{R}^m$ where $n \geq m$. This is a highly nonlinear integrand that, in particular, fails to be coercive. If u has a certain amount of regularity, then it will obey the coarea formula of Federer,

$$\int_E |J_m u| = \int_{\mathbb{R}^m} \mathcal{H}^{n-m}(E \cap u^{-1}(y)) d\mathcal{H}^m(y),$$

for measurable $E \subset \mathbb{R}^n$. This allows a geometric view of the problem, in addition to the variational one. We present a proof of existence for minimizers under certain hypotheses, as well as discussing some properties of these minimizers. (Received September 23, 2011)