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Alex Iosevich* (iosevich@math.rochester.edu). *Regular value theorem in a fractal setting.*

The classical regular value theorem says that if X, Y are smooth manifolds of dimensions n and m , $n > m$, respectively, and $F : X \rightarrow Y$ is a submersion on the set $\phi^{-1}(y) = \{x \in X : F(x) = y\}$, then $\phi^{-1}(y)$ is either empty or is a smooth $n - m$ sub-manifold of X . In this talk we shall see that under appropriate assumption on F , X may be taken to be an arbitrary product type set of a given Hausdorff dimension. Sobolev bounds for generalized radon transforms play a key role and the sharpness examples are based on the theory of distribution of lattice points on polynomial surfaces (Received June 27, 2011)