

Dilluns 20 de juny del 2011, 16:00h

CRM, Aula Petita.

A fractal analog of the regular value theorem

KRYSTAL TAYLOR

University of Rochester, New York, US

ABSTRACT: The regular value theorem in differential geometry says that if X and Y are smooth manifolds of dimension n and m , respectively, with $n > m$, and $\phi : X \rightarrow Y$ is a submersion on the set $\phi^{-1}(y) = \{x \in X : \phi(x) = y\}$, then $\phi^{-1}(y)$ is either empty or is a $n - m$ -dimensional sub-manifold of X . We prove a variant of this result where X is replaced by a set of a given Hausdorff dimension. Sobolev bounds for generalized Radon transforms play a key role. Distribution of lattice points on convex surfaces are used to construct sharpness examples.