

Speaker: Fred Xavier
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Thursday, October 2, 2014
2:00 pm
Room: 125 Hayes-Healy Hall

Title: There is no simple way of embedding isometrically the hyperbolic m -space in \mathbb{R}^n

Abstract:

Although the Nash theorem solves the isometric embedding problem, matters are inherently more involved if one is seeking an embedding that is well-behaved from the standpoint of submanifold geometry. More generally, consider a Lipschitz map $F : M^m \rightarrow \mathbb{R}^n$, where M^m is a Hadamard manifold whose curvature lies between negative constants. It is shown that F must perform a massive compression: For every $r > 0$ and integer $k \geq 2$ there exist k geodesic balls of radius r in M^m that are arbitrarily far from each other, but whose images under F are bunched together arbitrarily close in the Hausdorff sense of \mathbb{R}^n . In particular, every isometric embedding of hyperbolic m -space into \mathbb{R}^n has an intricate asymptotic behavior, irrespective of regularity, dimension or codimension. This is joint work with F. Fontenele.