

Speaker: Fred Xavier
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Thursday, November 13, 2014
2:00 pm
Room: 125 Hayes-Healey Hall

Title: Finiteness of prescribed fibers of local biholomorphisms: a geometric approach

Abstract:

(Joint work with Xiaoyang Chen) Let X be a Stein manifold of complex dimension at least two, $F : X \rightarrow \mathbb{C}^n$ a local biholomorphism, and $q \in F(X)$. We formulate sufficient conditions, involving only objects naturally associated to q , in order for the fiber $F^{-1}(q)$ to be finite. Explicitly, assume that $F^{-1}(l)$ is 1-connected for the generic complex line l containing q , and $F^{-1}(l)$ has finitely many components whenever l is an exceptional line through q . Using arguments from topology and differential geometry, we establish a sharp estimate on the size of $F^{-1}(q)$. It follows that for $n \geq 2$ a local biholomorphism of \mathbb{C}^n onto itself is invertible if and only if the pull-back of every complex line is 1-connected.