MATHEMATICS COLLOQUIUM

Complex analysis in several variables, CR manifolds, and realizability

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Abstract: I'll first briefly discuss two classical results in the theory of functions of several (always 2 or more) complex variables (Poincaré's theorem on the nonexistence of analogues to the Riemann mapping theorem, and Hartogs' theorem on extendability of holomorphic functions) to motivate a close look at smooth real hypersurfaces in C^n, $n \geq 2$. The structure these inherit from that of the ambient C^n is called a CR structure; its properties generalize to an abstract setting, leading to the definition of CR manifold (Greenfield). The geometric notion of strict convexity becomes strict pseudoconvexity. I will describe theorems on local realizability of these manifolds as hypersurfaces in some C^n (Kuranishi, Akahori), on non-realizability (Nirenberg), and a global embedding theorem (Boutet de Monvel), all assuming strict pseudoconvexity. I will then discuss an open problem in the case of dimension 5 and some progress in understanding the issues involved.

Date: **Tuesday, September 29, 2015**
Time: 3:05pm-4:05pm
Place: MAGC 1.302

Refreshments will be served at 2:45pm
For further information, or for special accommodations contact Dr. Zhijun Qiao via email at zhijun.qiao@utrgv.edu or at 956-665-3406