MATH SEMINAR SERIES
RUTGERS UNIVERSITY-CAMDEN

11:00AM -12:00PM, APRIL 1ST, 2025
ARMITAGE HALL - ROOM 124

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Title: The Cauchy-Riemann Equations on Domains in the Complex Projective Space

Abstract: The Cauchy-Riemann equations play central role in one and several complex variables. The Cauchy-Riemann operator $\bar\partial$ has been studied extensively on domains in the complex Euclidean space $\mathbb{C}^n$. Much less is known when the ambient manifold is not $\mathbb{C}^n$.

In this talk, we discuss the range of $\bar\partial$ on domains in the complex projective space $\mathbb{CP}^n$. We also study the $\bar\partial$-Cauchy problem on pseudoconvex domains and use it to prove the Sobolev estimates for $\bar\partial$ on pseudoconcave domains in $\mathbb{CP}^n$. In particular, we show that $\bar\partial$ does not have closed range in L^2 for $(2,1)$-forms on the Hartogs triangle in $\mathbb{CP}^2$. This is in sharp contrast to $\bar\partial$ on the Hartogs triangle in $\mathbb{C}^2$, where L^2 results have long been established by Hörmander.

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