

SEMINARIO DE ANÁLISIS Y APLICACIONES

Viernes, 9 de enero de 2015

11:30 h., **Aula Naranja** (ICMat, Campus de Cantoblanco)

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A sharp theory of Hardy spaces in
Ahlfors-regular quasi-metric spaces

Resumen:

One significant step in the development of the theory of Hardy spaces (H^p spaces) was the consideration of H^p defined on an environment, X , which is much more general than the Euclidean ambient. One issue that arises in this matter is that $H^p(X)$ is trivial unless p is “near” to 1. From this perspective, a central question is that of determining the range of p 's for which there exists a satisfactory theory of Hardy spaces and which is in full agreement with its Euclidean counterpart. In spite of the close scrutiny this issue has received over the years, there has yet to be a result in the current literature that may be regarded as an adequate answer to this central question.

In this talk I will present some recent progress with M. Mitrea detailing a sharp H^p -theory in the setting of Ahlfors-regular quasi-metric spaces. More specifically, in the above context we will introduce Hardy spaces defined via a grand maximal function and prove that a satisfactory H^p -theory exists for an optimal range of p 's, which depends on both the geometric and measure theoretic aspects of the ambient. This brings to a natural conclusion a number of attempts which have only produced partial results. Many facets of this theory will be discussed including sharp versions of several tools used in the area of analysis on quasi-metric spaces such as a sharp Lebesgue differentiation theorem and a maximally smooth approximation to the identity.