

SEMINARIO DE ANÁLISIS COMPLEJO (COMPLEX ANALYSIS SEMINAR)

**On the point spectrum of composition operators on H^p
spaces embedded into C_0 -semigroups**

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Abstract:

In recent time, C_0 -semigroups of operators have attracted an increasing attention in the analysis community. Indeed, some challenging problems concerning interesting properties of operators become more manageable when such an operator is assumed to belong to a C_0 -semigroup. That is the case, for instance, of the computation of the point spectrum of composition operators.

In this talk, we will consider C_0 -semigroups $\{C_{\varphi_t}\}_{t \geq 0}$ of composition operators on the Hardy spaces H^p . More precisely, those induced by parabolic semigroups of analytic functions on the unit disc $\mathbb{D}$, with Koenigs function h . We are interested in the study of the point spectrum of the operators C_{φ_t} . To do so, it suffices to look at the point spectrum of the infinitesimal generator of the semigroup of composition operators. This reduces to characterising those $\lambda \in \mathbb{C}$ such that $e^{\lambda h} \in H^p$. We will derive containment relations for the point spectrum and provide sufficient conditions for its complete characterization. Our techniques rely heavily on the geometric properties of $h(\mathbb{D})$ and on careful estimates of the harmonic measure of some boundary subsets of $h(\mathbb{D})$. These results extend a previous work of D. Betsakos for the hyperbolic case.

This is a joint work with professor F. Javier González Doña.