



# Seminario Rubio de Francia

## Conferencia

por

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Título:

*Commutants of finite Blaschke product multiplication operators on spaces of analytic functions*

*Resumen:* Except in special circumstances, it is quite difficult to determine conditions that characterize which operators commute with a given operator. Such special circumstances include self-adjoint and normal operators (where the spectral theorem can be used) and cases in which the operator in question has a rich point spectrum. The results in this latter situation often come from the application of the easy observation that if  $A$  and  $B$  commute, the eigenspaces of  $A$  are invariant for  $B$ .

If  $H$  is a Hilbert space of analytic functions on the unit disk and  $T_z$  is the operator of multiplication by  $z$ , it is well known that the commutant of  $T_z$  is the collection of multiplication operators  $T_f$  where  $f$  is a bounded analytic function that is in the multiplier algebra for  $H$  and  $(T_f h)(z) = f(z)h(z)$ .

In the 1970's and 80's, the question "Which operators on the Hardy space  $H^2(\mathbb{D})$  commute with  $T_f$  for  $f$  a bounded analytic function on the disk?" was investigated. More recently, there has been interest in this question for the Bergman space  $A^2(\mathbb{D})$  and weighted Bergman spaces. In this talk, an overview of the work of forty years ago will be presented and we will consider this question for  $f = B$ , a finite Blaschke product. We will identify the set of operators that commute with  $T_B$  acting on a broad collection of spaces including  $H^2(\mathbb{D})$ . This is a question that has wider consequences than might be expected and, suprisingly, we show that the commutants of the operators  $T_B$  are the same on all of these spaces.

Fecha: martes, 5 de junio de 2018.

Hora: 12:00 horas.

Lugar: seminario Rubio de Francia, edificio de Matemáticas, primera planta.

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