

**AN INTRODUCTION TO ROTA'S UNIVERSAL OPERATORS:
PROPERTIES, OLD AND NEW EXAMPLES AND FUTURE ISSUES**

The *Invariant Subspace Problem* for (separable) Hilbert spaces is a long-standing question and the use of universal operators in the sense of Rota has been one tool for studying the problem. Recall that a Hilbert space operator is called *universal* (in the sense of Rota) if every operator on a separable Hilbert space is similar to a multiple of the restriction of the universal operator to one of its invariant subspaces. In this series of lectures, we will focus on Rota's universal operators, studying their main properties and exhibiting some old and recent examples. Special attention will be given to the closed subalgebra, not always the zero algebra, of compact operators in the commutant of some of the Rota's universal operators exhibited. Consequences and questions related will be also addressed.

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