Integration operators on Bergman and Hardy spaces. Old results and new developments.

Alexandru Aleman, Lund University, Sweden

Abstract: The lectures regard the integral operator defined formally for analytic functions f in the unit disc by

$$f \to \int_0^z f(t)g'(t)dt$$

where g is a fixed analytic function in the disc called symbol. There is a fairly extensive literature concerning properties of these operators acting on various spaces of analytic functions. These lectures are focussed on their action on Bergman and Hardy spaces on the unit disc. I intend to discuss some examples provide some motivation and then turn to boundedness and spectrum of T_g on such spaces. There are a number of interesting fairly new results in this direction which will be emphasized. Finally, I intend to present a very recent development regarding boundedness of operators in the algebra generated by T_g and M_g, multiplication by the symbol g. These results are based on recent work with C. Cascante, Carme, J. Fàbrega, D. Pascuas, J.A. Peláez.