Dynamics of differentiation and integration operators on weighted spaces of entire functions

María José Beltrán Meneu

María José Beltrán Meneu (`maria.jose.beltran@uv.es`)
Universitat de València

Abstract.

The purpose of this lecture is to study the differentiation operator $Df = f'$, the integration operator $Jf(z) = \int_0^z f(\zeta)d\zeta$ and the Hardy operator $Hf(z) = \frac{1}{z}\int_0^z f(\zeta)d\zeta$ on weighted spaces of entire functions $B_{p,q}(v)$, $1 \leq p \leq \infty$, $q = 0$, $1 \leq q \leq \infty$, studied by Lusky, defined by weights of exponential type. We study the boundedness, the norm, the spectrum, compactness and surjectivity of the operators, and we analyze when they are power bounded, (uniformly) mean ergodic, hypercyclic or chaotic. The dynamics of these operators on weighted inductive and projective limits of spaces of entire functions is also studied.

References

[1] Atzmon, A.; Brive, B. Surjectivity and invariant subspaces of differential operators on weighted Bergman spaces of entire functions. *Bergman spaces and related topics in complex analysis, Contemp. Math., Amer. Math. Soc.* **404** (2006), 27–39.

[2] Beltrán, M.J.; Bonet, J.; Fernández, C. Classical operators on weighted Banach spaces of entire functions. *To appear in Proceedings of the American Mathematical Society.*

[3] Lusky, W. On generalized Bergman spaces. *Stud. Math.* **119** (1996), 77–95.