

# A subexponential vector-valued Bohnenblust-Hille type inequality

Daniel Núñez Alarcón\*

\*Universidade Federal de Pernambuco

## Resumo

The Bohnenblust-Hille inequality for complex homogeneous polynomials ([3], 1931) asserts that there is a function  $\mathcal{D} : \mathbb{N} \rightarrow [1, \infty)$  such that no matter how we select a positive integer  $N$  and an  $m$ -homogeneous polynomial  $P$  on  $\mathbb{C}^N$ , the  $\ell_{\frac{2m}{m+1}}$ -norm of the set of coefficients of  $P$  is bounded above by  $\mathcal{D}(m)$  times the supremum norm of  $P$  on the unit polydisc. Having good estimates for  $\mathcal{D}(m)$  is crucial for applications (for instance to the determination of the exact asymptotic growth of the Bohr radius). The best known estimates for  $\mathcal{D}(m)$  are due to F. Bayart, D. Pellegrino and J. Seoane ([2]) and show that the growth of  $\mathcal{D}(m)$  is subexponential. More precisely, in [2] it is shown that for any  $\varepsilon > 0$ , there is  $\kappa > 0$  such that

$$\mathcal{D}(m) \leq \kappa(1 + \varepsilon)^m,$$

for all positive integers  $m$ .

We show that a vector valued polynomial Bohnenblust-Hille inequality on complex Banach lattices is also subexponential for some special cases. Our main result recovers the best known constants of the classical polynomial inequality provided in [2].

Our approach is inspired in ideas and results from [2]. This work is contained in [1].

## Referências

- [1] N. Albuquerque, D. Núñez-Alarcón and D. M. Serrano-Rodríguez. - *A subexponential vector-valued Bohnenblust-Hille type inequality*, arXiv:1405.1204v1 [math.FA] 6 May 2014.
- [2] F. Bayart, D. Pellegrino and J. B. Seoane-Sepúlveda. - *The Bohr Radius of the  $n$ -dimensional polydisk is equivalent to  $\sqrt{(\log n)/n}$* , Adv. Math. 264, (2014), 726-746.

- [3] H. F. Bohnenblust and E. Hille, *On the absolute convergence of Dirichlet series*, Ann. of Math. (2) 32 (1931), 600-622.