# On the constants of the Bohnenblust–Hille inequality

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**Abstract**. The multilinear Bohnenblust–Hille inequality, proved in 1931 by H.F. Bohnenblust and E. Hille, asserts that for each positive integer $m$ there is a constant $C_m$ such that

$$\left( \sum_{i_1,\dots,i_m=1}^{N} \left| T(e_{i_1}, \dots, e_{i_m}) \right|^{\frac{2m}{m+1}} \right)^{\frac{m+1}{2m}} \leq C_m \left\| T \right\|,$$

for all positive integers $N$ and all $m$-linear forms $T$ defined on $\ell_\infty^N \times \cdots \times \ell_\infty^N$. This inequality and the precise understanding of the growth of its constants play an important role in different fields of Mathematics and Physics. We will present recent results on the (lower and upper) estimates for the constants $C_m$ for real and complex scalars. We show that, in contrast with the predictions from the last 80 years, these constants have an extremely low growth.

## References

[1] Nuñez-Alarcón, D.; Pellegrino, D.; Seoane-Sepúlveda, J.B. On the Bohnenblust-Hille inequality and a variant of Littlewood's 4/3 inequality. *J. Funct. Anal.* **264** (2013), no. 1, 326–336.

[2] Nuñez-Alarcón, D.; Pellegrino, D.; Seoane-Sepúlveda, J.B.; Serrano-Rodríguez, D.M. There exist multilinear Bohnenblust-Hille constants $(C_n)_{n=1}^{\infty}$ with $\lim_{n\to\infty}(C_{n+1} - C_n) = 0$. *J. Funct. Anal.* **264** (2013), no. 2, 429–463.