5007-47-88 **Daniel Núñez-Alarcón**, **D. M. Pellegrino**, **J. B. Seoane-Sepúlveda** and **Diana Marcela Serrano-Rodríguez*** (dmserrano0@gmail.com), João Pessoa, Paraíba. 58051115. *Title: There exist multilinear Bohnenblust–Hille constants* $(C_n)_{n=1}^{\infty}$ *with* $\lim_{n\to\infty}(C_{n+1}-C_n)=0$.

The n-linear Bohnenblust–Hille inequality asserts that there is a constant $C_n \in [1,\infty)$ such that the $\ell_{\frac{2n}{n+1}}$-norm of $(U(e_{i_1},\dots,e_{i_n}))_{i_1,\dots,i_n=1}^{N}$ is bounded above by C_n times the supremum norm of U, for any n-linear form $U:\mathbb{C}^N\times\cdots\times\mathbb{C}^N\to\mathbb{C}$ and $N\in\mathbb{N}$ (the same holds for real scalars). The power $2n/(n+1)$ is sharp but the values and asymptotic behavior of the optimal constants remain a mystery. The first estimates for these constants had exponential growth. We prove what we call *Fundamental Lema*, which brings new information on the optimal constants (denoted by $(K_n)_{n=1}^{\infty}$) for both real and complex scalars. For instance,

$K_{n+1}-K_n<\frac{0.87}{n^{0.473}}$

for infinitely many n's. For complex scalars we give a formula (of surprisingly low growth), in which π, e and the famous Euler–Mascheroni constant γ appear together:

$K_n<\frac{2}{\sqrt{\pi}}(n-1)^{\log_2\left(e^{\frac{1}{2}-\frac{\gamma}{2}}\right)}$

for every integer $n\geq 2$. (Received May 10, 2013)