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On the mixed (ℓ_1, ℓ_2)-Littlewood inequalities and interpolation. (English) Zbl 1429.47001

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Summary: It is well-known that the optimal constant of the bilinear Bohnenblust-Hille inequality (i.e., Littlewood's 4/3 inequality) is obtained by interpolating the bilinear mixed (ℓ_1, ℓ_2)-Littlewood inequalities. We remark that this cannot be extended to the 3 -linear case and, in the opposite direction, we show that the asymptotic growth of the constants of the m-linear Bohnenblust-Hille inequality is the same of the constants of the mixed $\left(\ell_{\frac{2m+2}{m+2}}, \ell_2\right)$-Littlewood inequality. This means that, contrary to what the previous works seem to suggest, interpolation does not play a crucial role in the search of the exact asymptotic growth of the constants of the Bohnenblust-Hille inequality. In the final section we use mixed Littlewood type inequalities to obtain the optimal cotype constants of certain sequence spaces.

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