The sup-norm vs. the norm of the coefficients

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Let $A^m_{p,r}(n)$ be the best constant such that the following inequality holds: for every m-homogeneous polynomial $P(z) = \sum_{|\alpha|=m} a_\alpha z^\alpha$ in n complex variables,

$$\Big(\sum_{|\alpha|=m} |a_\alpha|^r\Big)^{1/r} \leq A^m_{p,r}(n) \sup_{z\in B_{\ell_p^n}} \big|P(z)\big|.$$

In this talk we show the ideas behind the study of the asymptotic behavior of these constants when n goes to infinity. We also relate these estimates with the asymptotic behavior of the mixed unconditional constant $\chi_{p,q}(m,n)$ i.e., the least $\lambda > 0$ such that for every m- homogeneous polynomial P in n complex variables written as above it holds

$$\sup_{z\in B_{\ell_q^n}} \sum_{|\alpha|=m} |a_\alpha z^\alpha| \leq \lambda \left| \sup_{z\in B_{\ell_p^n}} \sum_{|\alpha|=m} a_\alpha z^\alpha \right|.$$

If time allows, we will treat the relation between $\chi_{p,q}(m,n)$ and the so-called mixed Bohr radii for holomorphic functions and exhibit some partial results on its asymptotic growth.

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