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## Some aspects of complex analysis in high dimensions

**Abstract.** We try to throw light on the common aspects of a couple of recent results (mainly inequalities) involving the monomial coefficients  $c_\alpha(f) = \partial^\alpha f(0)/\alpha!$  of holomorphic functions  $f$  in several or even infinitely many complex variables  $z_k$  (in particular, monomial coefficients of  $m$ -homogeneous polynomials). We mainly concentrate on the following topics: Bohr's power series theorem in several variables, the  $\bar{\partial}$ -equation  $\bar{\partial}u = f$  and monomial series representations  $\sum c_\alpha(f)z^\alpha$  in high dimensions, unconditionality in spaces of  $m$ -homogeneous polynomials on Banach spaces, and ordinary Dirichlet series  $\sum a_n/n^s$  with coefficients  $a_n$  in  $\mathbb{C}$  or more generally in a Banach space. Our results link old ideas of famous authors like Bohr, Bohnenblust, Hille and Littlewood with techniques which today are at the core of modern Banach space theory and Fourier analysis as well as infinite dimensional holomorphy.