MONOMIAL EXPANSIONS ON SEQUENCE SPACES

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Abstract. For each entire function f on n complex variables, there is a series of monomials, the monomial expansion of f, such that

$$f(z) = \sum_{\alpha} a_\alpha z^\alpha,$$

for every z and the convergence is uniform on each compact set. If f is a holomorphic function on an infinite dimensional sequence space X, then it also has a monomial expansion, but in this case, the series does not necessarily converge for every $z \in X$.

There has been some effort to characterize the subset of X where the monomial expansion of every holomorphic function on $\mathcal{F}$ converge, where $\mathcal{F}$ is a family of polynomials or of holomorphic functions on c_0 or ℓ_p. This set is called the *set of monomial convergence* of $\mathcal{F}$. The only case where set of monomial convergence has been completely characterized is when $X = \ell_1$, or $\mathcal{F} = \mathcal{P}(^m c_0)$.

In this talk we will describe the set of monomial convergence for the space $H_b(\ell_r)$ of entire functions of bounded type on ℓ_r, for $1 < r \leq 2$, and show that it is exactly a Marcinkiewicz sequence space.

We will also talk about the set of monomial convergence for $\mathcal{P}(^m \ell_r)$, the space of m-homogeneous polynomials on ℓ_r, and for the space $H^\infty(B_{\ell_r})$ of bounded holomorphic on the unit ball of ℓ_r, $1 < r \leq 2$.

The talk is based on a joint work with Daniel Galicer (Universidad de Buenos Aires), Martín Mansilla (Universidad de Buenos Aires) and Pablo Sevilla-Peris (Universidad Politécnica de Valencia).