If $E$ is a complex Banach algebra, a mapping $f : U \subset E \to E$ is Lorch analytic if given any $a \in U$ there exists $\rho > 0$ and there exist unique elements $a_n \in E$, such that $f(z) = \sum_{n=0}^{\infty} a_n (z - a)^n$, for all $z$ in $\|z - a\| < \rho$. The theory of Lorch-analytic mappings goes back to the 1940’s and is a very natural extension of the classical concept of analytic function to infinite dimensional algebras that allows concepts as Laurent series, singularities or a Mittag-Leffler’s theorem (see [1] and [2]). In this talk we are going to study topological and algebraic properties of algebras of analytic mappings (in the sense of Lorch) in connection with the topological and algebraic properties of the underlying space $E$.

In connection we consider the space

$$\Gamma(E) = \left\{ (a_n)_n \subset E ; \lim_{n \to \infty} \|a_n\|^{\frac{1}{n}} = 0 \right\}.$$ 

Endowed with the usual operations of addition, product by scalar and product, $\Gamma(E)$ is an algebra. This algebra, endowed with the topology associated to the metric

$$d(a, b) = \sup \{ \|a_0 - b_0\|; \|a_n - b_n\|^{\frac{1}{n}}, n \in \mathbb{N} \}$$

is algebraically isomorphic to the algebra of the mappings from $E$ into $E$ that are analytic in the sense of Lorch (under the Hadamard product) and the study of this algebra leads to a better knowledge of the topological and algebraic properties of $\Gamma(E)$.

Joint work with Alex F. Pereira (Universidade Federal do Rio de Janeiro).

REFERENCES