Symmetric Algebra of $\mathsf{L}(X, F)$ as an Algebra of Polynomials.

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The aim of the paper is to organize the symmetric algebra associated to the vector space of linear continuous maps defined on a Banach space X and taken values in a Banach algebra F, as a polynomial algebra, when X has some appropiate properties.

For that we introduce the notion of Banach space X with the F-approximation property, the notions of F-finite, F-approximable, F-nucleare n-linear maps, that coincide, when F is the complex field, with the finite, approximable and nuclear maps.

We prove that when X has the F-approximation property, there is a topological isomorphism between the symmetric algebra of $\mathsf{L}(X; F)$ and the F-polynomial algebra.