

LARGE ALGEBRAIC STRUCTURES IN FAMILIES OF HOLOMORPHIC FUNCTIONS AND OF SEQUENCES OF FUNCTIONS

LUIS BERNAL GONZÁLEZ
UNIVERSITY OF SEVILLA, SPAIN.

ABSTRACT. Quite frequently, a family of mathematical objects that present strange properties is far from being linear but, paradoxically, may contain rather large linear or algebraic structures. This property can be measured by using the concept of lineability, introduced by Gurariy at the beginning of this millenium: a subset A of a vector space X is called *lineable* whenever there is a vector space M with $\dim(M) = \infty$ such that $M \subset A \cup \{0\}$. Since then, several stronger properties, as for instance *dense lineability*, *spaceability* and *algebrability*, have been defined and studied by several mathematicians.

In the last two decades there has been a great advance in this line of research. In this expository talk, we present some recent discoveries in the topic, with special emphasis on families of holomorphic functions in infinite dimensional spaces, and on families of sequences of functions. Moreover, we introduce some results about the notions of S-lineability and convex lineability, also coined by Gurariy but unpublished until recently.