

INFINITE DIMENSIONAL ALGEBRAS WITH NO SIMPLE BASES

PINAR AYDOĞDU

Following [1], a basis B over an infinite dimensional F -algebra A is amenable if for all $r \in A$, the set of the coordinate vectors of the family $\{rb|b \in B\}$ with respect to B is summable. A basis B is said to be congenial to a basis C if the coordinate vectors of the elements of B represented with respect to C is summable. If B is congenial to C but C is not congenial to B , then we say that B is properly congenial to C . An amenable basis B is called simple if it is not properly congenial to any other amenable basis. In [1], the fundamental question whether all algebras have simple bases has been raised. In this work, using a construction inspired by that in [2] and [3], we introduce a family of algebras granting us examples of algebras without simple bases and of one-sided simple bases. This is a joint work with Sergio R. López-Permouth and Rebin A. Muhammad.

REFERENCES

- [1] L.M. Al-Essa, S.R. Lopez-Permouth and N.M. Muthana (2017): *Modules over infinite dimensional algebras*, Linear and Multilinear Algebra, DOI:10.1080/03081087.2017.1301365.
- [2] A.V. Kelarev and O.V. Sokratova (2000): *Syntactic Semigroups and Graph Algebras*, Bull. Austral. Math. Soc., 62, 471-477.
- [3] S. Oates-Wiliams (1984): *On the variety generated by Murskii's algebra*, Algebra Universalis, 18, 175-177.

DEPARTMENT OF MATHEMATICS, HACETTEPE UNIVERSITY, 06800 BEYTEPE, ANKARA, TURKEY
E-mail address: paydogdu@hacettepe.edu.tr