On the decomposable semigroups. Applications

J.I. García García M.A. University of Cádiz Unive e-mail: ignacio.garcia@uca.es. e-mail: maria

M.A. Moreno Frías University of Cádiz e-mail: mariangeles.moreno@uca.es

A. Vigneron Tenorio University of Cádiz e-mail: alberto.vigneron@uca.es

Abstract

In this paper we study some properties of decomposable semigroups and their associated ideals. We give an efficient method to determine the decomposition of this kind of semigroups which improves the computation of some objects related with them. In particular, we apply these improvements to some semigroups studied in Algebraic Statistics. We also prove a combinatorial characterization of decomposable semigroups.

References

- H. COHEN A Course in Computational Algebraic Number Theory, Graduate Texts in Mathematics, 138, Springer-Verlag, 1996.
- [2] M. DRTON, B. STURMFELS, S. SULLIVANT. Lectures on Algebraic Statistics, Vol 39 of Oberwolfach Seminars. Birkhäuser Basel book, 2009.
- [3] P. A. GARCIA-SANCHEZ, I. OJEDA. Uniquely presented finitely generated commutative monoids. arXiv/0907.4241.
- [4] I. OJEDA, A. VIGNERON-TENORIO. Indispensable binomials in semigroup ideals. Proc. Amer. Math. Soc., article in press.
- [5] G. PISTONE, E. RICCOMANGO, H. P. WYNN. Algebraic Statistics. CRC Press, 2001.
- [6] J.C. ROSALES, P.A. GARCÍA-SÁNCHEZ. On free affine semigroups. Semigroup Forum 58 (1999), no. 3, 367–385.
- [7] A. TAKEMURA, S. AOKI. Some characterizations of minimal markov basis for sampling from discrete conditional distributions. Ann. Inst. Statist. Math. 56(1) (2004), 1–17.
- [8] A. VIGNERON-TENORIO. Semigroup Ideals and Linear Diophantine Equations. Linear Algebra and its Applications 295 (1999), 133–144.