ON p-FROBENIUS OF AFFINE SEMIGROUPS

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Let $S \subseteq \mathbb{N}^q$ be an affine semigroup minimally generated by $A = \{a_1, \ldots, a_h\}$. For a fixed graded monomial order on $\mathbb{N}^q$, we define the p-Frobenius vector as the maximum element with at most p factorizations within S; that is, the maximum vector $n \in \mathbb{N}^q$ such that the set $Z_n(S) := \{\lambda = (\lambda_1, \ldots, \lambda_h) \in \mathbb{N}^h \mid n = \sum_{i=1}^h \lambda_i a_i\}$ has at most p elements. Notice that, for a numerical semigroup, the 0-Frobenius coincides with the usual Frobenius number, hence its name.

In this talk, we present results of [1]. More precisely, we produce algorithms that compute the p-Frobenius vectors of a given affine semigroup and we further investigate how these vectors behave under the *gluing* operation with $\mathbb{N}^q$.

References

[1] E. R. García Barroso, J. I. García-García, L. J. Santana Sánchez and A. Vigneron-Tenorio. *On p-Frobenius of affine semigroups.* To appear in Mediterranean Journal of Mathematics (2024).