

Centro de Investigação em Matemática e Aplicações
Departamento de Matemática
Programa de Doutoramento em Matemática

Seminário

30 de março de 2022

CLAV – anfiteatro 1 – 15h

ALMOST-POSITIONED NUMERICAL SEMIGROUPS

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A numerical semigroup is a subset S of \mathbb{N} that is closed under addition, contain 0 and has finite complement in \mathbb{N} .

Given a nonempty subset A of \mathbb{N} we will denote by $\langle A \rangle$ the submonoid of $(\mathbb{N}, +)$ generated by A , that is, $\langle A \rangle = \{\lambda_1 a_1 + \dots + \lambda_n a_n \mid n \in \mathbb{N} \setminus \{0\}, a_i \in A, \lambda_i \in \mathbb{N} \text{ for all } i \in \{1, \dots, n\}\}$. It is well known that $\langle A \rangle$ is a numerical semigroup if and only if $\gcd(A) = 1$.

If S is a numerical semigroup, then $m(S) = \min(S \setminus \{0\})$, $F(S) = \max\{z \in \mathbb{Z} \mid z \notin S\}$ and $g(S) = \text{card}(\mathbb{N} \setminus S)$ (cardinality of $\mathbb{N} \setminus S$) are three important invariants called multiplicity, Frobenius number and genus of S , respectively.

A numerical semigroup S is an almost-positioned numerical semigroup (AP-semigroup, for short) if S is $F(S) + m(S) + 1$ -positioned, that is, for all $x \in \mathbb{N} \setminus S$ we have that $F(S) + m(S) + 1 - x \in S$.

In this talk we give algorithmics for computing the whole set of almost-positioned numerical semigroup with fixed multiplicity and Frobenius number. Moreover, we prove Wilf's conjecture for this type of numerical semigroups.

Joint work with J.C. Rosales and M.C. Faria.



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UIDB/04674/2020



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