Seminar/Talk

Almost-Positioned numerical semigroups

M.B. Branco

Departamento de Matemática, Universidade de Évora, 7000 Évora, Portugal

Abstract: 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,

$$\langle A \rangle = \{\lambda_1 a_1 + \cdots + \lambda_n a_n \mid n \in \mathbb{N}\backslash\{0\}, a_i \in A, \lambda_i \in \mathbb{N} \text{ for all } i \in \{1, \ldots, n\}\}.$$

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 $\mathrm{m}(S) = \min(S\backslash\{0\})$, $\mathrm{F}(S) = \max\{z \in \mathbb{Z} \mid z \notin S\}$ and $\mathrm{g}(S) = \mathrm{card}(\mathbb{N}\backslash S)$ (cardinality of $\mathbb{N}\backslash S$) 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 $\mathrm{F}(S) + \mathrm{m}(S) + 1$-positioned, that is, for all $x \in \mathbb{N}\backslash S$ we have that

$$\mathrm{F}(s) + \mathrm{m}(S) + 1 - x \in S.$$

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

- **Dia:** 07 de Junho de 2022 às 15 horas.
- **Local:** Sala de Reuniões, Departamento de Matemática, UBI

Funded by the Portuguese Government through the FCT - Fundação para a Ciência e a Tecnologia under the project UIDB/00212/2020