

Infinite chains in the tree of numerical semigroups

Mariana Rosas-Ribeiro

April 21, 2024

We are interested in the general problem of the growth of the tree of numerical semigroups which organizes semigroups according to their genus. In order to investigate this matter, we focus on the nodes of the tree that have infinite descendants. Nodes of this type form infinite chains, first considered in [1]. Infinite chains seem to be rare, but they support the tree. In this talk we will demonstrate that the semigroups that belong to infinite chains and have multiplicity 4 or 6 draw a pattern on the tree, which allows us to count the number of numerical semigroups that are in infinite chains and have multiplicity less than or equal to 7 and any genus.

This is a joint work with Maria Bras-Amorós (preprint arXiv:2308.09500).

References

- [1] M. Bras-Amorós and S. Bulygin, Towards a better understanding of the semigroup tree, *Semigroup Forum*, 79 (2009), pp. 561–574, <https://doi.org/10.1007/s00233-009-9175-8>.