



# ODTU-Bilkent Algebraic Geometry

## On some invariants of the tangent cones of numerical semigroup rings

By

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**Abstract:** The minimal free resolution is a very useful tool for extracting information about modules. Many important numerical invariants of a module such as Hilbert function and Betti numbers can be deduced from its minimal free resolution. Stamate gave a broad survey on these topics when the modules are the semigroup ring or its tangent cone for a numerical semigroup  $S$ . He also stated the problem of describing the Betti numbers and the minimal free resolution for the tangent cone when  $S$  is 4-generated semigroup which is symmetric. In this talk, I will first give some of our results, based on a joint work with E.E. Zengin on the problem. Then, I will talk about our ongoing study which is an application of the Apéry table of the numerical semigroup to determine some properties of its tangent cone.

DI. STAMATE, Betti numbers for numerical semigroup rings. Multigraded Algebra and Applications, 238, 133-157, Springer Proceedings in Mathematics and Statistics, Springer, Cham 2018.

**Date:** 23 December 2024, Friday

**Time:** 15:40 (GMT+3)

**Place:** Zoom

To request the event link, please send a message to [sertoz@bilkent.edu.tr](mailto:sertoz@bilkent.edu.tr)