Monomial curve families supporting Rossi's conjecture

Sefa Feza Arslan

Rossi's conjecture saying that every Gorenstein local ring has non-decreasing Hilbert function is not solved even for monomial curves. In [1], we show that the Hilbert function is non-decreasing for local Gorenstein rings with embedding dimension four associated to monomial curves, under some arithmetic assumptions on the generators of their defining ideals in the non-complete intersection case. In [2], by using the technique of nice gluing, we give infinitely many families of 1-dimensional local rings associated to complete intersection monomial curves with non-decreasing Hilbert functions. In this talk, I summarize these results and present new families of 1-dimensional local rings associated to complete intersection monomial curves given with free parameters and obtained by using not nice gluing [3].

References

[1] F. Arslan, P. Mete, Hilbert functions of Gorenstein monomial curves, Proc. Amer. Math. Soc. 135 (2007) 1993-2002.

[2] F. Arslan, P. Mete, M. Şahin, Gluing and Hilbert functions of monomial curves, Proc. Amer. Math. Soc. 137 (2009) 2225-2232.

[3] F. Arslan, N. Şahin, N. Ös Sipahi, Monomial curves obtained by not nice gluing, Preprint

Mimar Sinan Güzel Sanatlar Üniversitesi, Matematik Bölümü

email: `feza.arslan@msgsu.edu.tr`.