Summary: Projective monomial curves correspond to rings generated by monomials of the same degree in two variables. Such rings always have finite Macaulayfication. We show how to characterize the Buchsbaumness and the Castelnuovo-Mumford regularity of these rings by means of their finite Macaulayfication, and we use this method to study the Buchsbaumness and to estimate the Castelnuovo-Mumford regularity of large classes of non-smooth monomial curves in terms of the given monomials.

MSC:
13F65 Commutative rings defined by binomial ideals, toric rings, etc.
14H20 Singularities of curves, local rings
13D45 Local cohomology and commutative rings
13H10 Special types (Cohen-Macaulay, Gorenstein, Buchsbaum, etc.)
14B15 Local cohomology and algebraic geometry

Keywords:
monomial curves; rings generated by monomials; finite Macaulayfication; Cohen-Macaulay ring; Buchsbaum ring; Castelnuovo-Mumford regularity; reduction number

References:
[16] Lam, T. T.G., On the reduction numbers and the Castelnuovo-Mumford regularity of projective monomial curves (2020), Preprint
- Zbl 1390.13043


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