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On the Cohen-Macaulayness of the coordinate ring of certain projective monomial curves.
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Summary: Let K be a field and let $\{n_1, \dots, n_e\} \subset \mathbb{Z} > 0$ such that $\gcd(n_1, \dots, n_e) = 1$ and $n_1 < n_2 < \dots < n_e$. Let A' be the coordinate ring of the projective monomial curve in the projective e -space \mathbb{P}_K^e defined parametrically by $Z_0 = X^{n_e}, \dots, Z_i = X^{n_e - n_i} Y^{n_i}, \dots, Z_e = Y^{n_e}$ where $n_0 := 0$. In this paper under some assumptions, we discuss when exactly the graded ring A' is Cohen-Macaulay and we give a numerical criterion for this in terms of the standard basis of the semigroup generated by n_1, \dots, n_e in the case when some $e - 1$ terms of n_1, \dots, n_e form an arithmetic sequence. Our special assumptions are satisfied in the case $e = 3$, in particular, for the class of monomial projective space curves, we get a criterion for arithmetically Cohen-Macaulayness.

MSC:

- [13C14](#) Cohen-Macaulay modules
- [14M05](#) Varieties defined by ring conditions (factorial, Cohen-Macaulay, semi-normal)
- [13F20](#) Polynomial rings and ideals; rings of integer-valued polynomials
- [14H50](#) Plane and space curves

Cited in **5** Documents

Keywords:

[Cohen-Macaulayness of the coordinate ring](#); [monomial curves](#)

Full Text: [EMIS](#) [EuDML](#)