SYMBOLIC BLOW-UP ALGEBRAS OF CERTAIN MONOMIAL CURVES

ABSTRACT. Let $d \geq 2, m \geq 1$ and gcd $(d, m) = 1$. Let $\mathfrak{p}$ denotes the prime ideal corresponding to the monomial curve parameterised by $x_i \to t^{n_i}$ where $1 \leq i \leq d$ and $n_i = d + (i-1)m$. In 1994, S. Goto proved that the symbolic Rees algebra $\mathcal{R}_s(\mathfrak{p}) = \bigoplus_{n \geq 0} \mathfrak{p}^{(n)}$, where $\mathfrak{p}^{(n)} := \mathfrak{p}^n R_{\mathfrak{p}} \cap R$, is Noetherian. He further showed that if $d = 3, 4$, then $\mathcal{R}_s(\mathfrak{p})$ is Cohen-Macaulay and raised the question whether $\mathcal{R}_s(\mathfrak{p})$ is Cohen-Macaulay if $d \geq 5$. In this talk we will give a positive answer to his question. This is my joint work with Clare D'Cruz.