# On classification of matrix representations of monoids of the fourth order

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We describe canonical forms of the matrix representations of monoids of the fourth order over an arbitrary field and classify (up to equivalence) all their indecomposable representations. We also indicate criteria on representation type.

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# Reducibility of canonical $t$-cyclic monomial matrices over commutative local rings

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We study canonical $t$-cyclic matrices over commutative local rings.

Let $K$ be a commutative local ring with radical $R \neq 0$ and let $t \in R$ such that $t^m = 0$, $t^{m-1} \neq 0$.

A cyclic matrix of the form

$$A = M_t(\overline{a}) = \begin{pmatrix} 0 & \dots & 0 & a_n \\ a_1 & \dots & 0 & 0 \\ \vdots & \ddots & \vdots & \vdots \\ 0 & \dots & a_{n-1} & 0 \end{pmatrix},$$

is called canonical cyclic. The sequence $\overline{a} = (a_1, \dots, a_{n-1}, a_n)$ is called the defining sequence of $A$. If all elements $a_i$ have the form $t^{s_i}$ $(t \in K)$, where $s_i \geq 0$ $(i = 1, 2, \dots, n)$, the matrix $A$ is called canonical $t$-cyclic [**3**].

Theorem 1. *Any canonical $t$-cyclic matrix over $K$ with defining sequence containing subsequence $(t^i, t^{p+q}, t^j, 1)$, where $i + q \geq m$, $j + p \geq m$, is reducible.*

Corollary 1. *Any canonical $t$-cyclic matrix over $K$ with defining sequence containing subsequence $(t^{m-1}, t^2, t^{m-1}, 1)$ is reducible.*

## References

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