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A NEW FAMILY OF COMPANION FORMS OF POLYNOMIAL MATRICES[*]

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Abstract. In this paper a new family of companion forms associated to a regular polynomial matrix is presented. Similar results have been presented in a recent paper by M. Fiedler, where the scalar case is considered. It is shown that the new family of companion forms preserves both the finite and infinite elementary divisors structure of the original polynomial matrix, thus all its members can be seen as linearizations of the corresponding polynomial matrix. Furthermore, for the special class of self-adjoint polynomial matrices a particular member is shown to be self-adjoint itself.

Key words. Polynomial matrix, Companion form, Linearization, Self-adjoint polynomial matrix.

AMS subject classifications. 15A21, 15A22, 15A23, 15A57.

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