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LINEARIZATIONS OF POLYNOMIAL MATRICES WITH SYMMETRIES AND THEIR APPLICATIONS*

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Abstract. In an earlier paper by the present authors, a new family of companion forms associated with a regular polynomial matrix was presented, generalizing similar results by M. Fiedler who considered the scalar case. This family of companion forms preserves both the finite and infinite elementary divisor structure of the original polynomial matrix, thus all its members can be seen as linearizations of the corresponding polynomial matrix. In this note, its applications on polynomial matrices with symmetries, which appear in a number of engineering fields, are examined.

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

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

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