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DISTURBANCE DECOUPLING FOR DESCRIPTOR SYSTEMS BY MEASUREMENT FEEDBACK*

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Abstract. In this paper, the disturbance decoupling problem for descriptor systems via feedbacks that are based on measurements is discussed. Necessary and sufficient conditions are derived for the existence of feedbacks so that the disturbances do not influence the input/output behavior. At the same time, the closed-loop system becomes regular, of index at most one, and possibly also stable. The construction is based on a transformation to condensed form under orthogonal equivalence transformations that can be directly implemented as a numerically stable method.

Key words. Disturbance decoupling, Descriptor systems, Orthogonal transformation, Condensed form

AMS subject classifications. 93B05, 93B40, 93B52, 65F35

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