Strong Decoupling of Descriptor Systems via Proportional State Feedback.

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Abstract: The problem of strong input-output decoupling by proportional state feedback is considered for linear descriptor systems. The resulting system is required to be regular, with a diagonal transfer function matrix and an impulse-free response.

The problem is solved in two steps. First, a generalized structure algorithm is used to regularize the system. Then, another algorithm is proposed which produces a sequence of integers. These integers are invariant under restricted system equivalence and regular proportional state feedback. The second algorithm provides a condition for existence as well as a procedure for construction of a decoupling feedback law.

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