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**Stability of the pseudo-inverse method for reconfigurable control systems.** (English)

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Summary: One of the key reconfigurable control methods, the pseudo-inverse method (PIM), is analyzed and new insight is obtained which provides the theoretical basis for this practical approach. The main shortcoming of this method, the lack of stability guarantees, is pointed out and a new approach is proposed in which recent results on the stability robustness of linear systems are used to provide stability constraints for the solutions of the PIM. When the original PIM solution results in an unstable closed-loop system, the control redesign problem is treated as a constraint minimization problem. For single-input systems, a closed-form solution is presented; for multi-input systems, a near-optimal solution is found which maintains the stability of the closed-loop system.

**MSC:**

93B28 Operator-theoretic methods

93D09 Robust stability

Cited in **33** Documents

**Keywords:**

stability robustness; multi-input systems; near-optimal solution; closed-loop system

**Full Text:** [DOI](#)

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