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Preservation of Algebraic Stability Domains in Reduced Models

Wednesday 19 February 2025 09:00 (45 minutes)

For linear control systems, we study algebraic stability domains which are defined by polynomial inequalities in the complex plane. Based on Kharitonov's characterization via generalized Lyapunov matrix inequalities, we define a suitable pair of Gramians and a balancing transformation. Then we analyze the preservation of these stability domains by balanced truncation. For domains bounded by conic sections we obtain positive results, while for some other types of domains counterexamples are presented.

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