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Semidefinite Programming Relaxations and Algebraic Optimization in Control

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We present an overview of the essential elements of semidefinite programming as a computational tool for the analysis of systems and control problems. We make particular emphasis on general duality properties as providing suboptimality or infeasibility certificates. Our focus is on the exciting developments which have occurred in the last few years, including robust optimization, combinatorial optimization, and algebraic methods such as sum-of-squares. These developments are illustrated with examples of applications to control systems.



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Keywords

Control Theory; Duality; Linear Matrix Inequalities; Semidefinite Programming; Sum of Squares

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