PEFORMING THE GAMMA-ITERATION IN OPTIMAL H-INFINITY CONTROL VIA PERMUTED GRAPH BASES

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Abstract

We present a new numerical method for the gamma-iteration in robust control based on the extended matrix pencil formulation. The new method bases the iteration on the computation of special subspaces associated with matrix pencils. We introduce a permuted graph representation of these subspaces, which avoids the known difficulties that arise, when the iteration is based on the solution of algebraic Riccati equations but at the same time makes use of the special symmetry structures that are present in the problems. We show that the new method is applicable in many situations where the conventional methods fail.