

Subsystem Interconnection And Near Optimum Control Of Discretebalanced Systems

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Summary

The relationship between subsystem interconnection of discrete balanced systems and the Hankel singular values is explored. Upper bounds on the spectral norm of the submatrices of the discrete balanced representation are derived by approximating the matrix Riccati equation by its power series expansion with respect to two scalar parameters related to the Hankel singular values. For diagonalizable symmetric discrete-time systems, the relation between the eigenvalues of the subsystems and the eigenvalues of the overall system is explored. It is shown that an upper bound on the distance between corresponding eigenvalues in these two sets is related to the ratio of the Hankel singular values

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