



Denis Mustafa, Keith Glover

Minimum Entropy H_∞ Control

Series: Lecture Notes in Control and Information Sciences

This monograph is concerned with the design of feedback controllers for linear multivariable systems, which are robust to system uncertainty. System uncertainty can be realistically represented by including perturbations with bounded H_2 -norm, and this is the approach taken here. For a given H_2 -norm bound, there is a family of robustly stabilizing controllers, and the central question in this book is which of these controllers to choose. One choice to take is that which minimizes the entropy of the resulting closed loop transfer function, and the derivation and properties of this solution occupies most of this monograph. Explicit formulae are obtained for the minimum entropy solution, which is a precisely defined compromise between the Linear Quadratic Gaussian optimal solution and the H_2 -optimal solution. The book will be appropriate for graduate classes requiring only a first course in state-space methods, and some elementary knowledge of H_2 control and Linear Quadratic Gaussian control.

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