

ROBUST CONTROL: FROM THEORY TO APPLICATION

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We consider the problems related to the design and implementation of robust control laws for uncertain multivariable systems. The numerical properties of Riccati-based and Linear Matrix Inequalities-based algorithms for H_∞ design are compared and the properties of methods for μ -analysis and synthesis are discussed. Some rules in the choice of weighting filters in H_∞ design and in the μ -synthesis are summarized. Avoidance of the saturation of plant actuators in the presence of noises is considered as an important issue in the practical implementation of robust control. Several aspects of the real time application of digital robust control laws are discussed. Results from the implementation of a 24-th order robust control law for a sampled-data multivariable laboratory system, designed by μ -synthesis, are presented.