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Stabilization of infinite-dimensional linear system using finite-dimensional state controllers.

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Defining an infinite-dimensional plant via an input-output model, it is possible to solve a linear-quadratic optimum control problem using a sequence of linear finite-dimensional models of increasing dimension. The complementary sensitivity function G_m of a finite-dimensional closed-loop system is firstly investigated. The closed-loop system consists of an m -dimensional model P_m of the plant and the optimum dynamic controller F_m designed for the model P_m . The robustness of the controller is determined by investigating the behaviour of $|G_m(j\omega)|$ depending on the order m of the model P_m . Then some results are presented about the dependence between two functionals and the order m of the model P_m . The functionals are defined on the impulse responses of two closed-loop systems: the plant P and the plant model P_m both feedback by the controller F_m .

Reviewer: [M.Tibaldi \(Bologna\)](#)

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