

ON COERCIVITY AND THE FREQUENCY DOMAIN CONDITION IN INDEFINITE LQ-CONTROL*

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Dedicated to Dr. Vasile Drăgan on the occasion of his 70th anniversary

Abstract

We introduce a coercivity condition as a time domain analogue of the frequency criterion provided by the famous Kalman-Yakubovich-Popov lemma. For a simple stochastic linear quadratic control problem we show how the coercivity condition characterizes the solvability of Riccati equations.

MSC: 93C80, 49N10, 15A24, 93E03

keywords: linear quadratic control, Riccati equation, frequency domain condition, stochastic system

1 Introduction

Since the formulation of the Kalman-Yakubovich-Popov-lemma in the 1960s the interplay of time domain and frequency domain methods has always been fruitful and appealing in linear control theory. For the linear-quadratic

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