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BOUNDEDNESS CONDITIONS FOR THE ANISOTROPIC NORM OF STOCHASTIC SYSTEMS WITH MULTIPLICATIVE NOISE*

Adrian–Mihail Stoica† Isaac Yaesh‡

Abstract

The aim of this paper is to provide conditions for the boundedness of the anisotropic norm of discrete–time linear stochastic systems with multiplicative noise. It is proved that these conditions can be expressed in terms of the existence of a stabilising solution of a specific Riccati equation satisfying some additional constraints.

MSC: 93E03, 93E10, 93E25

keywords: anisotropic norm, stochastic systems, multiplicative noise, optimal estimation

1 Introduction

The signal filtering problem received much attention over the last seven decades, starting with the early formulation and developments due to E. Hopf and N. Wiener in the 1940's. Two decades later, the well-known results of Kalman and Bucy ([10], [11]) have been successfully implemented in

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†adrian.stoica@upb.ro, University "Politehnica" of Bucharest, Faculty of aerospace engineering, Str. Polizu, No. 1, 011063, Bucharest, Romania

‡iyaesh@imi-israel.com, Control Department, IMI Advanced Systems Div., P.O.B. 1044/77, Ramat-Hasharon, 47100, Israel