

Accepted Manuscript

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PII: S0947-3580(17)30288-1
DOI: [10.1016/j.ejcon.2018.03.003](https://doi.org/10.1016/j.ejcon.2018.03.003)
Reference: EJCON 263

To appear in: *European Journal of Control*

Received date: 10 August 2017
Revised date: 13 December 2017
Accepted date: 21 March 2018

Please cite this article as: O.G. Andrianova, A.A. Belov, Robust performance analysis of linear discrete-time systems in presence of colored noise, *European Journal of Control* (2018), doi: [10.1016/j.ejcon.2018.03.003](https://doi.org/10.1016/j.ejcon.2018.03.003)

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Robust performance analysis of linear discrete-time systems in presence of colored noise[☆]

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Abstract

In this paper, linear discrete-time time-invariant (LDTI) normal and descriptor systems with norm-bounded parametric uncertainties are under consideration. The input signal is supposed to be a “colored” noise with bounded known mean anisotropy level (spectral color). The conditions of anisotropic norm boundedness for such class of systems are derived. The algorithm is based on convex optimization technique. A numerical example is given.

Keywords: descriptor systems, uncertain linear systems, norm-bounded uncertainties, colored noise, stochastic systems.

2010 MSC: 47N10

1. Introduction

In recent years problems of robust control and performance analysis of uncertain systems affected by external disturbances have become one of the most popular research areas in modern control theory. Considerable attention is paid to problems of robust stabilization and robust performance analysis

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¹This work is supported by the Government of the Russian Federation through ITMO Postdoctoral Fellowship program (grant 074-U01) and the Russian Foundation for Basic Research (grant 17-08-00185).

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