

Accepted Manuscript

Eigenvalue Assignment for Positive Observers and Its Feasibility

Van Thanh Huynh, Hieu Trinh

PII: S0947-3580(17)30057-2
DOI: [10.1016/j.ejcon.2017.05.001](https://doi.org/10.1016/j.ejcon.2017.05.001)
Reference: EJCON 206

To appear in: *European Journal of Control*

Received date: 13 February 2017
Revised date: 6 April 2017
Accepted date: 1 May 2017

Please cite this article as: Van Thanh Huynh, Hieu Trinh, Eigenvalue Assignment for Positive Observers and Its Feasibility, *European Journal of Control* (2017), doi: [10.1016/j.ejcon.2017.05.001](https://doi.org/10.1016/j.ejcon.2017.05.001)



This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Eigenvalue Assignment for Positive Observers and Its Feasibility

Van Thanh Huynh^{a,*}, Hieu Trinh^a

^a*School of Engineering, Deakin University, Geelong, VIC 3217, Australia.*

Abstract

In this paper, we discuss a new problem of establishing feasibility conditions for regional eigenvalue assignment of positive observers. Previous results on regional eigenvalue assignment [for observers of linear time-invariant positive systems](#) are also improved. Unlike observable dynamical systems whose closed-loop eigenvalues can be assigned arbitrarily, eigenvalues of positive observers are indicated unable to be assigned into any arbitrary region. We derive feasibility conditions in the form of constrained convex programming under which the regional eigenvalue assignment is possible. Moreover, we propose a new method for solving the regional eigenvalue problem of positive observers once the feasibility conditions are satisfied. Numerical examples are given to show the efficacy of the proposed method.

Keywords: Positive systems, positive observers, constrained programming, eigenvalue assignment.

1. Introduction

State observation for general dynamical systems has been extensively discussed in the literature, but recently attention has been directed towards synthesis of state observers for positive systems which are used to model nonnegative natural processes. [Positive systems have also found their ways into applications](#)

*Corresponding author

Email addresses: v.huynh@deakin.edu.au (Van Thanh Huynh),
hieu.trinh@deakin.edu.au (Hieu Trinh)

Download English Version:

<https://daneshyari.com/en/article/5001726>

Download Persian Version:

<https://daneshyari.com/article/5001726>

[Daneshyari.com](https://daneshyari.com)