## ROBUST STABILITY ANALYSIS OF LINEAR SYSTEMS WITH DELAYS

KANIT MUKDASAI

DOCTOR OF PHILOSOPHY
IN MATHEMATICS

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่ Copyright<sup>©</sup> by Chiang Mai University All rights reserved

THE GRADUATE SCHOOL
CHIANG MAI UNIVERSITY
APRIL 2010

## ROBUST STABILITY ANALYSIS OF LINEAR SYSTEMS WITH DELAYS

KANIT MUKDASAI

A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN MATHEMATICS

ลิ<mark>ชสิทธิมหาวิทยาลัยเชียงใหม</mark> Copyright<sup>©</sup> by Chiang Mai University All rights reserved

THE GRADUATE SCHOOL
CHIANG MAI UNIVERSITY
APRIL 2010

## ROBUST STABILITY ANALYSIS OF LINEAR SYSTEMS WITH DELAYS

#### KANIT MUKDASAI

# THIS THESIS HAS BEEN APPROVED TO BE A PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN MATHEMATICS

#### **EXAMINING COMMITTEE**

Jessada Tariboon

Lect. Dr. Jessada Tariboon

MEMBER

Assoc. Prof. Dr. Piyapong Niamsup

MEMBER

Prof. Amnuay Kananthai

Suther Suastai M

MEMBER

Prof. Dr. Suthep Suantai

kreamen Rdchesit

MEMBER

Lect. Dr. Kreangkri Ratchagit

8 April 2010

© Copyright by Chiang Mai University

### ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my supervisor, Assoc. Prof. Piyapong Niamsup, for his initial idea, guidance and encouragement which enable me to carry out my study successfully.

This work contains a number of improvement based on comments and suggestions provided by Lect. Dr. Jessada Tariboon, Prof. Amnuay Kananthai, Prof. Dr. Suthep Suantai and Lect. Dr. Kreangkri Ratchagit. It is my pleasure to express my sincere thanks to them for their generous assistance.

Thanks are also extended to all my best friends at Chiang Mai University for their help, friendship, and moral support. Moreover, I gratefully appreciate my beloved family for their love and encouragement.

Finally, I extend my sincere thanks to the Graduate School, Chiang Mai University and the Development and the Promotion of Science and Technology Talents Project (DPST) which made my doctoral study possible.

Kanit Mukdasai

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่ Copyright<sup>©</sup> by Chiang Mai University All rights reserved