

وزارة التعليم العالي والبحث العلمي
جامعة المنهرين
كلية العلوم

مخمن دينامي غير خطي لطائفة من انظمة السيطرة الدينامية غير الخطية

رسالة

مقدمه إلى كلية العلوم في جامعة المنهرين
وهي جزء من متطلبات نيل درجة ماجستير
علوم في الرياضيات

من قبل

فاطمة صاحب كاظم الطائي

(بكالوريوس علوم، ٢٠٠٣)

بإشراف

د. راضي علي زبون

Conclusions

- 1- A nonlinear dynamic system state observer in deterministic_manner have been proposed and due to the lack of time, the design of state space and state estimator is not considered in our applications.
- 2- The stability behaviors of the dynamical systems are considered in this work, in theoretical point of view, but its numerical simulation has not been considered.
- 3- The desired eigenvalue of closed loop system play an important role in determine the type of stability, transient time, steady state time, maximum overshoot, etc, and due to the theory of lyapunove, there types effect as well as numerical simulation.
- 4- Strongly the behavior of the original nonlinear system except the case where its linearization has a centre behavior. At this case the linearization behavior has no effect to the behavior of original nonlinear system.

Dedication

*To whom I hope he can feel me . . .
my father (Allah bless him)*

*To the kindest heart . . . my mother
(Allah protect her)*

To dearest brother . . . Ali

*To all who loved me . . . my sisters
and especially ... to my husband*

Fatema

Examining Committee's Certification

We certify that we read this thesis entitled " *NONLINEAR DYNAMIC OBSERVER FOR A CLASS OF NONLINEAR DYNAMIC CONTROL SYSTEMS*" and as examining committee examined the student, *Fatema Saheb Kadhem* in its contents and in what it connected with, and that is in our opinion it meet the standard of thesis for the degree of Master of Science in Mathematics.

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المستخلص

في هذه الأطروحة المتواضعة، لقد تم عرض و تطوير مشروع عمل جديد لبعض أنظمة السيطرة غير الخطية و تصميمها، مستندين على قاعدة رياضية مدعومة بالبراهين الضرورية اللازمة و مرفق معها الخوارزميات العديدة الضرورية. لقد تم كذلك عرض بأمانه قدر الاستطاعة بعض الاستنتاجات و الملاحظات المهمة و الضرورية و مدعومة ببعض الامثلة.



Supervisors Certification

I certify that this thesis was prepared under my supervision at the department of mathematics computer applications, *College of Science, Al-Nahrain University* as a partial fulfillment of the requirements for the degree of master in mathematics.

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In view of the available recommendations; I forward this thesis for debate by the examining committee.

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Acknowledgments

I am deeply indebted to my supervisor Dr. Radhi Ali Zboon for his tired with me, and patience in helping me to achieve this important work. I would like to thank the Mathematics Department staffed at Al- Nahrain University for giving me the chance to complete my graduate study.

I would like to thank the dean of the College of Science of Al-Nahrain University.

I especially would like to thanks my dear husband and all my friends and to all who loved me for their support and continued love.

Fatema

2006




References



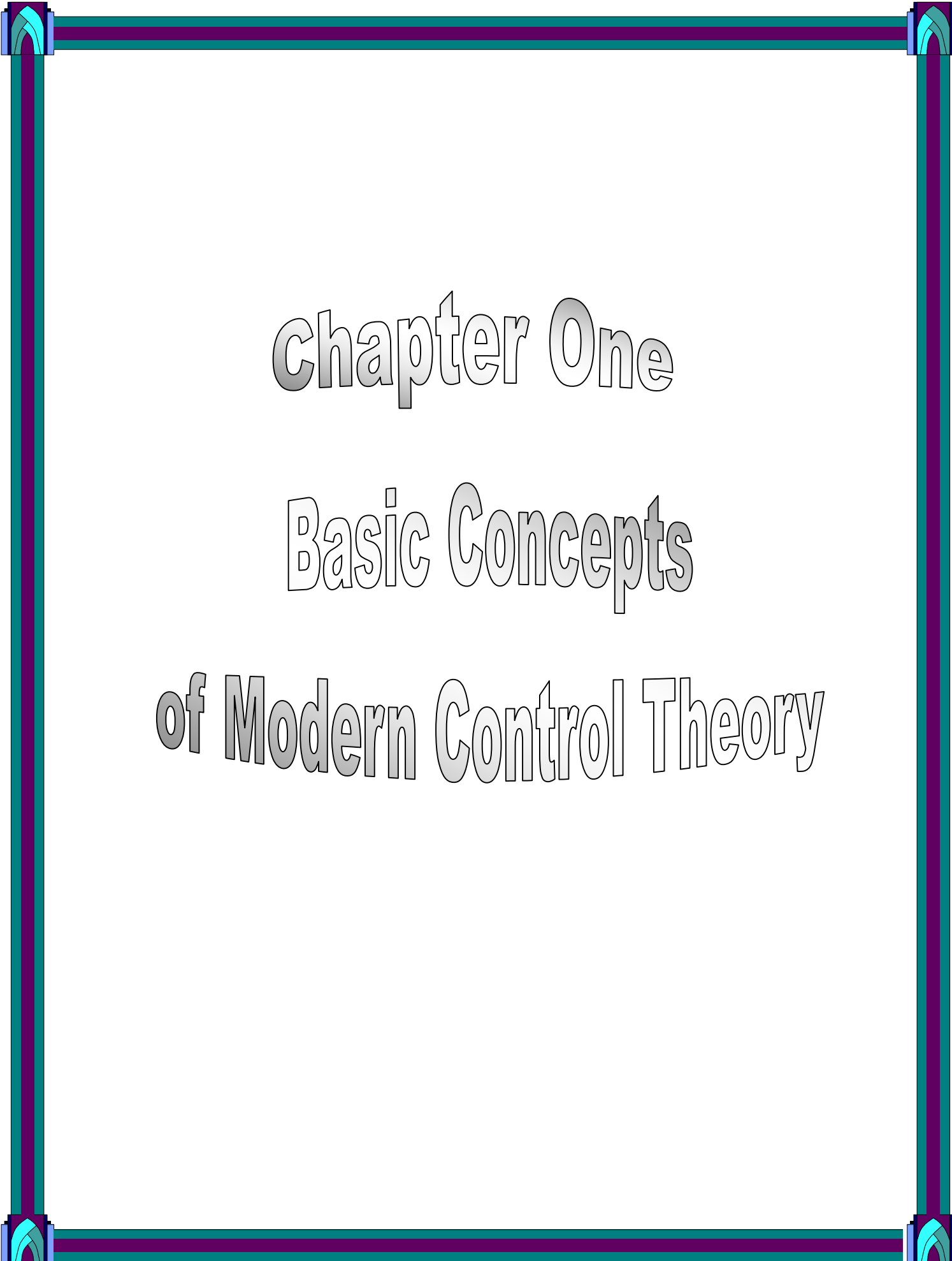
Contents



Future Work



Conclusions



chapter One

Basic Concepts

of Modern Control Theory



chapter Two

Nonlinear Dynamical

Observer and Applications

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التخصص :- الرياضيات التطبيقية (مخمن دينامي غير خطي لطائفة من

انظمة السيطرة الدينامية غير الخطية)

تاريخ المناقشة :- ٢٠٠٦ / ١٢ / ٥

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الدينامية غير الخطية)

المفاتيح الاستدلالية :- Control systems, Observer, Differential

equations, Numerical solution of dynamic system.

المستخلص

في هذه الأطروحة المتواضعة، لقد تم عرض و تطوير مشروع عمل جديد لبعض أنظمة السيطرة غير الخطية و تصميمها، مستندين على قاعدة رياضية مدعومة بالبراهين الضرورية اللازمة و مرفق معها الخوارزميات العددية الضرورية.

لقد تم كذلك عرض بأمانه قدر الاستطاعة بعض الاستنتاجات و الملاحظات المهمة و الضرورية و مدعومة ببعض الأمثلة.

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Thesis entitle:- (NONLINEAR DYNAMIC OBSERVER FOR A CLASS OF NONLINEAR DYNAMIC CONTROL SYSTEMS)

Key words:- (Control systems, Observer, Differential equations, Numerical solution of dynamic system.)

Abstract

In this thesis, a new scheme and procedure for nonlinear dynamical control system design are proposed and developed. The proposed scheme is based on some suggested theorems. The proofs of the presented Theorems as well as their computational algorithm have been developed and presented. The concluding and necessary remarks have also been discussed.

Some illustrations have also been implemented.