



TI0153 - Trabalho de Conclusão de Curso II
Department of Teleinformatics Engineering
Federal University of Ceará - UFC

Optimal Control: An application to a non-isothermal continuous reactor

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June 16, 2019



Summary

Introduction

- Contextualization
- Problem Definition

Dynamical System Analysis

- Mathematical Models for Chemical Reactors
- General Properties of Dynamical Models
- Experiments

State-Feedback Controllers

- Definitions
- Regulation vs. Tracking

Optimal Control

- Formulation
- Linear Quadratic (LQ) Controllers
- Simulations

Optimal State Estimation

- Formulation
- Kalman Filter and LQG Controllers
- Simulations

Conclusion



Introduction



During the semester, we have discussed Conservation Laws of fluid elements...

Conservation of Mass

$$\left(\begin{array}{c} \text{Time rate of} \\ \text{change of mass} \\ \text{in the system} \end{array} \right) = \left(\begin{array}{c} \text{Mass} \\ \text{entering} \\ \text{the system} \end{array} \right) - \left(\begin{array}{c} \text{Mass} \\ \text{leaving} \\ \text{the system} \end{array} \right)$$



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Dynamical System Analysis



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State-Feedback Controllers



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Optimal Control



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Optimal State Estimation



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Thank you!
Questions?