TECHNICKÁ UNIVERZITA V LIBERCI
Fakulta mechatroniky, informatiky
a mezioborových studií

# DIPLOMA THESIS EVALUATION
## OPPONENT EVALUATION

**Author name:** Kirill Lastochkin

**Thesis title:** Explicit predictive control in aplication

**Opponent:** Prof. Dr. Vadim Zhud

**Opponent workplace:** Head of Department of Automation NSTU(Russia)

A. Abstract quality, keywords matching . . . . . . . . . . . . . . . Excellent minus (1-)

B. Research scope and processing . . . . . . . . . . . . . . . . . . Excellent (1)

C. Level of theoretical part . . . . . . . . . . . . . . . . . . . . Excellent (1)

D. Appropriateness of the methods . . . . . . . . . . . . . . . . . Excellent (1)

E. Results elaboration and discussion . . . . . . . . . . . . . . . Excellent (1)

F. Students own contribution . . . . . . . . . . . . . . . Excellent (1)

G. The conclusion statement . . . . . . . . . . . . . . . . . . . . Excellent (1)

H. Fulfillment of Thesis tasks (goals) . . . . . . . . . . . . . . . Fulfiled

I. Structure, correctness and fulness of references . . . . . . . . . Excellent (1)

J. Typographical and language level . . . . . . . . . . . . . . . . Very good (2)

K. Formal quality . . . . . . . . . . . . . . . . . . . . . . . . . . Excellent (1)
   (text structure, chapters order, clarity of illustrations)

Comments, remarks

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**Overall assessment:**

This thesis describes an implementation of a microcontroller-based control system. Such systems are used in many applications, so the subject of this work is timely and essential. The main goal of this work was to design a microcontroller-based Model Predictive Control strategy and to explore the dynamic behavior of the unit.

Many model-based control methods have been developed previously. I would especially like to highlight the wide-ranging and well-structured review of control methods presented in this thesis. Each section of the review provides a good introduction to a particular aspect of the subject.

The most significant part of the thesis focuses on an implementation of the control algorithm based on an explicit model of predictive control.

The performance of such algorithms depends on parameter values that are obtained from simulation results. The author presents simulations, experimental results and a comparison with popular simpler PID-Control and Robust Control methods.

This thesis provides a contribution to the field of an implementation of microcontroller-based control system.

**Questions for the defense:**

1. What algorithm is used for the region search? Why this particular algorithm?

2. How to choose the clock frequency? Explain the method to obtain the data.

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**Overall classification:**

Work meets the Master degree requirements and therefore I recommend it for defense

I suggest to classify this work by grade   Excellent (1)

In  Novosibirsk, Russia

date  01.06.2015

By signing I certify that I am not in any personal relationship with the author of the thesis

. . . . . . . . .

Opponent signature

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