

I. IDENTIFICATION DATA

Thesis title:	Fiber-optic based Fabry-Pérot interferometry for high-resolution motion detection
Author's name:	Shou-Yue Chen
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Dept. of Electromagnetic Field
Thesis reviewer:	doc. Ing. Lucie Hudcová, Ph.D.
Reviewer's department:	Dept. of Radio Electronics, Faculty of Electrical Engineering and Communication, Brno University of Technology

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>How demanding was the assigned project?</i>	
The complexity of the work is mainly in the time-consuming nature of proposed laboratory measurements and the necessary precision in the handling of optical components to achieve the specified requirements on the optical signal quality.	

Fulfilment of assignment	fulfilled
<i>How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.</i>	
One of the points of the assignment was „Propose and experimentally verify an FPI configuration with a resolution below 100 nm“. A resolution of 2.08 nm was achieved, which is an excellent result.	

Methodology	correct
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
The methods used in solving the diploma thesis were correct and corresponded to the requirements of the assignment.	

Technical level	B - very good.
<i>Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?</i>	
The student got acquainted with the principle of FFPI and DC-FFPI function and studied motion detection methods. She performed the necessary measurements at the designed experimental workplace. I have no doubts about her expertise. On the other hand, the form of presentation of technical results does not correspond to the achieved successes. I miss a deeper analysis and interpretation of the achieved results in the diploma thesis. The text of the thesis has a superficial character.	

Formal and language level, scope of thesis	D - satisfactory.
<i>Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?</i>	
Formally, the work has a very small extent. The overall text of the thesis is presented on 34 pages, including the Introduction and Conclusion. The main chapter Results and discussion is more like a protocol from a laboratory exercise than an analysis of the obtained scientific results. This is a pity, as this way of interpreting the achieved goals significantly reduces the quality of the excellent achieved results.	

Selection of sources, citation correctness**B - very good.**

Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?

I don't think there was a violation of citation ethics and all sources were properly cited. The student could include a comparison with the state of knowledge in the world in the Introduction and use more current/newer publications.

Additional commentary and evaluation (optional)

Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.

The work contains a number of ambiguities, inaccurate and simplified formulations. It would be appropriate to add descriptive labels on particular optical components directly to the photos of the workplaces. It would be also appropriate to clearly define the objectives of the work in the Introduction, including an analysis of individual objectives.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

Summarize your opinion on the thesis and explain your final grading. Pose questions that should be answered during the presentation and defense of the student's work.

Although the student achieved extraordinary results in her work (e.g. resolution of 2.08 nm), unfortunately, the processing of the text part of her diploma thesis reduces the overall quality of the thesis.

The grade that I award for the thesis is **C - good**.

Question: Why did you choose the mirrors with a reflectance of 4% and 99% in the experimental part of the work? Have you considered using a mirror with a different reflectivity? Is it possible to develop a general methodology/recommendation for determining the optimal reflectance of a mirror for FFPI and DC-FFPI?

Date: **27.5.2020**

Signature: