THESIS SUPERVISOR'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**The Mathematics of Compressed Sensing in MRI**
Author's name:	**Lenka Jacková**
Type of thesis :	
Faculty/Institute:	
Department:	Department of Circuit Theory
Thesis reviewer:	Doc RNDr Jiří Velebil, PhD
Reviewer's department:	Department of Mathematics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment

How demanding was the assigned project?

The assigned theme is a combination of complexity theory , optimisation, advanced linear algebra and probability theory. Ms Jacková had to review some areas of mathematics that are not taught at FEE at the level of bachelor studies. Moreover, the topic of the thesis belongs to quite a recent area of research. Hence Ms Jacková had to delve not only into established textbooks but also into technically challenging research papers.

Fulfilment of assignment

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.

The assigned tasks have been fully covered. The resulting text is built logically and presents the reader with the basic mathematical aspects of Compressed Sensing. On top of that, Ms Jacková did not shy away from going beyond mathematics: comments on the history of magnetic resonance and the history of computability are also provided.

Activity and independence when creating final thesis

Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.

Ms Jacková worked very actively, met all the deadlines and always attended the meetings well-prepared. Moreover, Ms Jacková actively sought improvements to the structure of the proofs and their accompanying text.

Technical level

Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?

Ms Jacková wrote a text that is mathematically sound. The definitions, statements and their proofs are written clearly. Wherever possible, the abstract concepts are accompanied by well-chosen concrete examples. The text contains a right amount of explanatory pictures and graphs. Moreover, the text of the thesis possesses a natural flow: the technical parts of the text are glued together by a connecting text that tells the reader what comes next and why it is necessary.

Formal level and language level, scope of thesis

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?

The thesis is written in English, it consists of 54 pages (including the table of contents, the index and the list of references), it is divided into 8 chapters and it contains a brief summary. The thesis is typeset in TeX. The organisation of the thesis is logical and the text is easy to read. The English of the thesis is very mature. I found only a few typos that do not in any way hinder the reader's understanding of the text.

Selection of sources, citation correctness	

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?

Citations are provided and presented according to the usual mathematical standards. The references are chosen in a well-balanced way.

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.

As stated in the assignment, the thesis was not expected to bring new results. In a developing field, such as Compressed Sensing, this would be an unrealistic expectation at the level of bachelor thesis. I value strongly that Ms Jacková went through the existing literature and always sought for clarity of explanation in her text.

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.

The text of the thesis exposes the reader to a modern method in image processing in a very reader-friendly manner. It should be stressed that to write a mathematical text that is enjoyable to read is not an easy task. The bachelor thesis of Ms Jacková fulfills that: the thesis is both readable and mathematically sound.

In my opinion the text amply fulfills the requirements for a bachelor thesis.

On basis of the above, the grade that I award for the thesis is

Date:

Signature: