THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Design of a tilting Mechanism of CBM experiment Beam Pipe**
Author's name:	**Jan KOLLARCZYK**
Type of thesis :	master
Faculty/Institute:	Faculty of Mechanical Engineering (FME)
Department:	Department of Designing and Machine Components
Thesis reviewer:	Patrick Dahm
Reviewer's department:	GSI - Helmholtzzentrum für Schwerionenforschung

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment **challenging**

How demanding was the assigned project?

The thesis focuses on providing several suitable concepts for a tilting mechanism, that is to be used for the beam pipe of the CBM experiment at the FAIR-Facility in Darmstadt, Germany.
Additionally, simulations are to be created and an Experiment for validation of the results is to be conducted. Taking into account the challenges, provided by the environment and conditions in the experiment, the difficulty of the assignment is challenging for a diploma thesis.

Fulfilment of assignment **fulfilled**

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 assignment has been fulfilled. Several viable concepts are described in the thesis, calculations are present, CAD models and drawings have been provided.

Methodology **correct**

Comment on the correctness of the approach and/or the solution methods.

The methods of conception, used for the thesis are correct and suitable. In depth technical research was conducted.

Technical level **A - excellent.**

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?

The technical level of the thesis is excellent. It is evident, that the student did in depth research for the presented solutions and applied the insights, gained from this.

Formal and language level, scope of thesis **B - very good.**

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 language level in the thesis is very good. Colloquial and descriptive parts are fully sufficient, use of some technical terms and descriptors could be improved upon. Structure and presentation are also very well established. The presentation of technical research is lengthy at times.

Selection of sources, citation correctness **A - excellent.**

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?

Used sources in relation to the calculations are correct, Sources for specialized technology are also very well selected. The main source regarding the CBM experiment is relevant and correct however it is outdated by now. Distinction between cited parts and parts, written by the student is clear.

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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 requirements of the assignment were fulfilled; the chosen procedure was correct. The student conducted in depth research regarding technology and manufacturing techniques and applied the results thereof. The results and concepts were presented in a well-structured and concise manner. The language level is adequate and contains only minor flaws. The formal part of the thesis i.e. citation, labels for figures and tables etc. is also executed very well.

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.

The assignment, to design a tilting mechanism for the beam pipe of the CBM-Experiment, was fulfilled to our full satisfaction. The student conducted in depth technical and market research and applied his findings to the solution. His presentation of results and concepts is well structured and readable.

Questions:

What is the reason, to weld tubing sections and bellows on the inside rather than on the more accessible outside?

Can you give a (rough) estimation on the lifetime of the presented concepts?

what possible points of failure do you see in the concepts?

The grade that I award for the thesis is **A - excellent.**

Date: **20.8.2021** Signature: