



# Supervisor's statement of a final thesis

**Supervisor:** doc. Dr. André Sopczak  
**Student:** Bc. Petr Fiedler  
**Thesis title:** Systematic Comparison of TPX and TPX3 devices regarding luminosity measurements in the ATLAS cavern  
**Branch / specialization:** Web and Software Engineering, specialization Software Engineering  
**Created on:** 1 June 2021

## Evaluation criteria

### 1. Fulfillment of the assignment

- ▶ [1] assignment fulfilled
- [2] assignment fulfilled with minor objections
- [3] assignment fulfilled with major objections
- [4] assignment not fulfilled

All parts of the thesis assignments are fulfilled.

### 2. Main written part 98/100 (A)

The thesis is adequate in contents and scope. The results have been cross-checked and are consistent. The thesis structure has a natural flow and it is well thought through. The language is very clear, and already at the proof-reading phase only a few mistakes had to be corrected. Citations are properly used. There are no copyright issues.

### 3. Non-written part, attachments 100/100 (A)

The software development has a high standard and significantly improved previous coding. The code is well documented and can be used in the future. It is also written in a way to allow extensions which make the code attractive also for related projects.

### 4. Evaluation of results, publication outputs and awards 98/100 (A)

The code has been deployed in practice and allows the systematic and consistent evaluation and comparison of recorded data at the Large Hadron Collider at CERN. There is potential for future applications and additions of modules (for example activation). While the code is developed for the analysis of TPX/TPX3 data, it has also the potential to analyse data from other detectors, for example the AFP detector. There is high interest in

luminosity measurements with the potential of dedicated publications, including the team of the detector developers and operators.

## 5. Activity of the student

- ▶ [1] excellent activity
- [2] very good activity
- [3] average activity
- [4] weaker, but still sufficient activity
- [5] insufficient activity

Petr developed the code with a deep understanding of the physics goals. He met all deadlines and presented intermediate results in internal working group meeting and also to the dedicated CERN working group.

## 6. Self-reliance of the student

- ▶ [1] excellent self-reliance
- [2] very good self-reliance
- [3] average self-reliance
- [4] weaker, but still sufficient self-reliance
- [5] insufficient self-reliance

The student has a good potential for academic work, and independent scientific creative work. He is encouraged for PhD research at CERN to combined his physics and programming interests.

## The overall evaluation

98 /100 (A)

The thesis contains a very well developed code which matches the scientific requirements for the physics analysis of luminosity measurements at CERN. The code has an excellent performance and a structure which allows applications also in the future, including the potential of application also for the analysis of data from other detectors for luminosity measurements.

## **Instructions**

### **Fulfillment of the assignment**

Assess whether the submitted FT defines the objectives sufficiently and in line with the assignment; whether the objectives are formulated correctly and fulfilled sufficiently. In the comment, specify the points of the assignment that have not been met, assess the severity, impact, and, if appropriate, also the cause of the deficiencies. If the assignment differs substantially from the standards for the FT or if the student has developed the FT beyond the assignment, describe the way it got reflected on the quality of the assignment's fulfilment and the way it affected your final evaluation.

### **Main written part**

Evaluate whether the extent of the FT is adequate to its content and scope: are all the parts of the FT contentful and necessary? Next, consider whether the submitted FT is actually correct – are there factual errors or inaccuracies?

Evaluate the logical structure of the FT, the thematic flow between chapters and whether the text is comprehensible to the reader. Assess whether the formal notations in the FT are used correctly. Assess the typographic and language aspects of the FT, follow the Dean's Directive No. 26/2017, Art. 3.

Evaluate whether the relevant sources are properly used, quoted and cited. Verify that all quotes are properly distinguished from the results achieved in the FT, thus, that the citation ethics has not been violated and that the citations are complete and in accordance with citation practices and standards. Finally, evaluate whether the software and other copyrighted works have been used in accordance with their license terms.

### **Non-written part, attachments**

Depending on the nature of the FT, comment on the non-written part of the thesis. For example: SW work – the overall quality of the program. Is the technology used (from the development to deployment) suitable and adequate? HW – functional sample. Evaluate the technology and tools used. Research and experimental work – repeatability of the experiment.

### **Evaluation of results, publication outputs and awards**

Depending on the nature of the thesis, estimate whether the thesis results could be deployed in practice; alternatively, evaluate whether the results of the FT extend the already published/known results or whether they bring in completely new findings.

### **Activity of the student**

From your experience with the course of the work on the thesis and its outcome, review the student's activity while working on the thesis, his/her punctuality when meeting the deadlines and whether he/she consulted you as he/she went along and also, whether he/she was well prepared for these consultations.

### **Self-reliance of the student**

From your experience with the course of the work on the thesis and its outcome, assess the student's ability to develop independent creative work.

### **The overall evaluation**

Summarize which of the aspects of the FT affected your grading process the most. The overall grade does not need to be an arithmetic mean (or other value) calculated from the evaluation in the previous criteria. Generally, a well-fulfilled assignment is assessed by grade A.