

I. IDENTIFICATION DATA

Title:	Longitudinal Electron Beam Stability at EuXFEL and FLASH at DESY
Author's name:	Roman Janovcik
Type of assignment:	Bachelor Project
Faculty:	Faculty of Nuclear Sciences and Physical Engineering (FNSPE)
Department:	Department of Physics (DP)
Supervisor:	Ing. Jiri Kral, PhD
Supervisor's affiliation:	FNSPE CTU, DESY

II. ASSESSMENT OF CRITERIA

Work assignment and topic motivation	average
<i>Assess how demanding the assigned topic is. Brief introductory word on motivation for choosing the topic.</i>	
The project is designed as a usual bachelor project with freedom to scale up or down based on the student performance. The motivation is a) to introduce the student into accelerator instrumentation field; b) to provide broad spectrum of experience to the young student ranging from electronics work to data analysis; c) to include one sub-topic where the student can work on a more complete/longer mini project with a scientific result.	

Fulfilling the assignment	fulfilled
<i>Consider whether the work submitted meets the assignment topic. Comment, if necessary, on items of the assignment not fully answered, or mention whether the scope of the assignment has been broadened. If student failed to fully treat the assigned topic, try to assess the importance, impact and/or the reasons for failings.</i>	
Primarily, the scientific result of the work on the principal sub-topic, evaluation of environmental effects on the arrival time measurement, provides a firm and reliable characterization of the devices, which serves already as a bases for further improvement of their long-term stability, and finally better beam parameters for the users. The student also achieved all necessary steps in order to establish a persistent humidity monitoring system for both XFEL and FLASH devices. Secondly, the technical analysis of noise injected by optical switching improved the level of control over the devices, and lead to removal of the noise from the current on-line measurements. Last but not last, the student did research into the topic theory, worked in laboratory with the physical equipment, with lasers, with fine mechanical devices, with complex equipment, prepared and carried out laboratory measurements, designed simple electronics (with professional tools), wrote data acquisition and analysis scripts, operated devices in live accelerators, participated on and used allocated measurement time, wrote and ran data analysis and produced results.	
Considering the above, I find the assignment fulfilled both, from the point of the production of "useful scientific result" and also from the point of the student gaining insight and basics of various skills. The only deficiency is that there was not enough time to work more on the electronics design (intensity monitor) which was swapped for a smaller project of temperature controller driver carrier board design. In light of the other work that was done, I find this deficiency irrelevant.	

Student's effort and independent approach to the topic solution	excellent
<i>Assess whether student displayed constant effort while investigating the problem, whether they regularly consulted the issues and whether they attended consultations well prepared. Assess student's creativity and independence.</i>	
Working on a project at distance (at DESY) brings prospect to interact internationally with a large establishment, but brings additional challenges as well. The student adapted rapidly and managed the challenges in an excellent manner. I find the level of consultation very satisfactory, after a brief introduction the	

student was always able to research/work on the topics independently, coming well prepared and informed to follow-up consultations. The student was able to work alone with complex setups and laboratory equipment. The student did progress with assignments independently without problems. The student improved noticeably his skills to search for information pro-actively.

There are 2 points for slight criticism:

- a) Limited willingness to ask living colleagues/supervisors for assistance/information/opinion – i.e.: it helps to discuss the present challenges with someone, even if the challenge is minor, not a dead-end nor blocking the work
- b) I would appreciate a bit more scepticism or suspiciousness towards any produced intermediary results – i.e.: when a result looks unexpected or “funny” or suspicious, to question the methods and tools with which it was obtained (and check them), rather than to trust the outcome. It is understandable thought that this skill comes with experience and the number of previous failures.

Professional standard

excellent

Give your opinion on the professional standard of the work, application of course knowledge, references, and data from student's practice.

The work meets the expected professional standard for both the results and the written document. The student shows comprehension of the topic theory and is able to assess the details in respect to the larger picture. He invested time into practical measurement above the usual expectation, with willingness to travel abroad.

Level of formality and of the language used

excellent

Assess the use of scientific formalism, the typography and language of the work.

There is nothing to complain about. There are none of the usual shortcomings present in this work: the fonts in figures are readable, there are descriptions, illustrative figures are present. The text flows reasonably. The level of formality is as expected. The language is at the usual international level.

Choice of references, citation correctness

excellent

Give your opinion on student's effort in utilizing references in their investigation. Characterize the choice of references and say whether all relevant sources were utilized. Verify whether all resource facts were properly distinguished from student's own findings and results, whether there was no breach of citation ethics, and whether all reference citations are complete and agree with the citation usage and standards.

I find all of the above fulfilled. On contrary, the effort of the student in the case of resource and references utilization and research is extraordinary.

Further comments and assessment

Give your opinion on the quality of the main results obtained in the work, e.g. on the level of quality of theoretical results, or the applicability of the engineering and programming outputs of the solutions obtained, on publication activity, experimental skills, etc.

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III. OVERALL ASSESSMENT AND SUGGESTED GRADE

Summarize all aspects of the work most influential for the overall assessment. If adequate, write questions to be answered by student during the defence of their work before the board.

My overall assessment is that the student fulfilled all the given tasks. The results of his work provide undisputable value of professional level to the greater project. The student tried and learned various skills, what would not be possible without his curiosity and willingness to do so. The written document is above the average level of Bc. thesis know to me. Understanding of the topic theory adequate to Bc. level was shown.

Suggested grade: A - excellent.

Date: 23.8.2023

Signature:

