

**I. IDENTIFICATION DATA**

<b>Title:</b>	<b>Detachment tomographic inversion study with fast visible cameras on the COMPASS tokamak</b>
<b>Author's name:</b>	<b>Michal Odložilík</b>
<b>Type of assignment:</b>	Bachelor Project
<b>Faculty:</b>	Faculty of Nuclear Sciences and Physical Engineering (FNSPE)
<b>Department:</b>	Department of Physics (DP)
<b>Reviewer:</b>	Ing. Martin Imříšek, Ph.D.
<b>Reviewer's affiliation:</b>	Institute of Plasma Physics of the CAS

**II. ASSESSMENT OF CRITERIA**

<b>Work assignment</b>	<b>demanding</b>
<i>Assess how demanding the work topic is.</i>	
The topic was rather demanding for Bachelor project since it required relatively large scope of work and acquiring new set of know-how including modelling and calibration of the view of used cameras, learning principles of specialised tomographic methods, performing tomographic reconstructions of signals from visible cameras and dealing with artefacts caused by toroidal asymmetries or reflections and evaluating results.	

<b>Fulfilling the assignment</b>	<b>fulfilled</b>
<i>Consider whether the work submitted meets the assignment. If necessary, give your comments on items of the assignment not fully answered, or judge whether the scope of the assignment has been broadened. If student failed to fully treat the assignment, try to assess the importance, impact and/or the reasons for the failings.</i>	
The work successfully fulfilled the assignment.	

<b>Chosen approach to solution</b>	<b>appropriate</b>
<i>Assess whether student applied a correct approach or method of solution.</i>	
The approach of the work is well chosen and appropriate: after the precise calibration and selection of relevant data, two tomographic methods are applied and compared: minimum Fisher regularisation which is commonly applied in tokamaks and biorthogonal basis decomposition which seems to be convenient for used cameras. Discussion on the accuracy of results is also given.	

<b>Professional standard</b>	<b>excellent</b>
<i>Assess the professional standard of the work, application of course knowledge, references, and data from practice.</i>	
Both theoretical and practical part of the thesis are well written and have high professional standard. Understanding of the theory is well expressed in the practical part.	

<b>Level of formality and of the language used</b>	<b>average</b>
<i>Assess the use of scientific formalism, the typography and language of the work.</i>	
The language contains several errors in the form of typos, missing words or grammatical errors. Nevertheless, the thesis is overall well written and comprehensible. I appreciate that the thesis is written in English which probably made its writing more difficult but it makes the work more accessible.	

<b>Choice of references, citation correctness</b>	<b>excellent</b>
<i>Assess student's effort in finding and using study sources for completing their work. Give characteristics of the references chosen. Assess whether student made use of all the relevant sources. Verify whether all items used are properly distinguished from the results obtained by student and their deliberations, whether there are no violations of citation ethics, and whether the bibliography presented is complete and complies with the citation usage and standards.</i>	
The sources for the work are well referenced and appropriately selected.	

**Further comments and assessment**

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

The results of the work relate to one of the most important topics in fusion research which is shielding of divertor plates in tokamaks from high heat fluxes. The results in the thesis have perspective to be used for comparison with simulations and with experiments on other devices to improve understanding of impurity seeding.

**III. OVERALL ASSESSMENT, QUESTIONS TO BE ASKED DURING THE WORK DEFENCE, SUGGESTED GRADE**

*Summarize those aspects of the work that were significantly influential for your overall assessment. Suggest questions to be answered by student during the defence of the work before the examination board.*

The thesis demonstrates that the author understands the theory of tomography in tokamaks and he is able to apply the acquired skills to perform tomographic reconstructions as well as to discuss and analyse the results from experiments. The work contains minor grammatical errors but it is overall well written, structured and comprehensible. I appreciate the discussion on the accuracy of reconstructions. The results are valuable for the fusion research and provide useful comparison between two different tomographic methods during impurity seeding. I suggest to classify the thesis with the highest grade: A.

My questions are as follows:

Q1: How can you identify nitrogen radiation on the camera?

Q2: What are the possible pros and cons if you take image for calibration during discharge instead of taking image before the discharge?

Suggested grade: **A - excellent.**

Date: 30/08/2023

Signature:

