

APPROVED

by Resolution of Doctoral Committee of Natural Sciences field, Physics direction (N 002) of Vilnius University and Center for Physical Sciences and Technology on 27 March 2024, protocol No. (7.17 E) 15600-KT-124

PREPARATION AND DEFENSE OF THE DISSERTATION IN THE FIELD OF PHYSICS (N 002)

1. The dissertation, as an integral research paper (except in the case referred to in Paragraph 2), shall contain: the text of the dissertation, its summary (written in a language other than the dissertation), and a list and copies of the research papers of the person submitting the dissertation for defence (hereinafter ‘the author of the dissertation’). The dissertation may be printed as an integrated single publication or it may be divided into parts.
2. A research monograph written without co-authors may be also presented for defence as a doctoral dissertation. A summary of the monograph shall be submitted with the monograph. Other research publications are submitted if they are necessary for a comprehensive presentation of the topic of the dissertation.
3. At the proposal of the academic supervisor of the doctoral student and after the approval of the Committee, the dissertation completed as a set of research articles may be submitted for defence. In that case, the dissertation shall consist of an overview of at least one author’s sheet in length, a summary in Lithuanian or a foreign language (in a language different from that of the overview, with a recommended length of up to 0.5 author’s sheet), and copies of the research publications of the author of the dissertation on the basis of which the dissertation is defended, indicating the specific personal contribution of the author. The most important findings of the research carried out by the author must be published in at least five articles (in at least two of them the author of the dissertation must be the only author or the main co-author) published or accepted for publishing (having a digital object identifier (hereinafter the ‘DOI’) or other proof of acceptance for publishing) in international research journals with a citation index in the *Clarivate Analytics Web of Science (CA WoS)* database. A doctoral student is considered to be the main co-author of the research article if he is the first author of the article, provided that it is not indicated otherwise in the journal where the article is published or the article itself. The Doctoral Committee is responsible for determining the compliance of the personal contribution of the doctoral student with the requirements for the dissertation. The dissertation has to indicate the research articles on the topic of the dissertation that the doctoral student is the main co-author of.
4. The dissertation must be an original research paper, whose author substantiates the problem researched, defines the relevance of the research topic, formulates the goal and objectives of the paper, specifies the novelty of the research paper and presents the statements set out for defence, as well as an overview of the research and studies on the topic of the dissertation (in Lithuania and globally), presents the study methodology (methods), discusses the research results, substantiating their reliability and their relation to the data obtained by other researchers, draws up conclusions, and describes other aspects that in their view are relevant. Along with the dissertation, the doctoral student shall submit a list of scientific events where the research results of the dissertation were made public as well as the Curriculum Vitae and a description of the research and creative activities of the author of the dissertation.
5. The dissertation must be written in a grammatically correct language in accordance with the writing standards and language norms. The text of the dissertation shall be written in Lithuanian or English, or, subject to the approval of the Committee, other than the Lithuanian or the English language. The recommended scope of a dissertation (except a dissertation submitted on the basis of a set of research articles) is from four to ten author’s sheets (one author’s sheet equals 40,000 characters).
6. The summary or the overview of the dissertation when it is submitted for defence on the basis of

a set of research articles shall contain a description of the problem researched in the dissertation, the goal and objectives of the research paper, disclosure of the novelty of the research, a brief description of the research methodology, the key results and conclusions based thereon that the doctoral student defends, as well as concise information about the doctoral student. The scope of the dissertation summary shall be between 0.5 and 1 author's sheet; the summary of the dissertation shall be written in the Lithuanian or the English language (other than the language of the dissertation). The summary of the dissertation must be written in grammatically correct language in accordance with the writing standards and language norms.

7. The summary of the monograph that is defended as a dissertation shall be at least one author's sheet in scope and prepared in the Lithuanian or the English language (other than the language of the monograph).

8. The dissertation and its summary shall detail the academic supervisor of the doctoral student, the consultant (if any), the summary shall also detail the composition of the Dissertation Defence Panel (if the dissertation is printed as an integrated publication, the composition of the Dissertation Defence Panel is specified at the very beginning of the publication). In case the academic supervisor was changed, the dissertation and its summary shall detail the previous academic supervisor and the period of their supervision. Examples of the title and second pages of the dissertation and the summary are presented in Annexes 3 and 4 to the Regulation of Doctoral Studies at Vilnius University (hereinafter – Regulation).

9. The doctoral student shall defend their dissertation during the period of doctoral studies. If the doctoral student submits the dissertation to the Committee before the end of the doctoral studies but fails to defend it in due time, the dissertation can be defended within 12 months after the end of the doctoral studies under the regular procedure. The dissertation that was not defended within this period shall be defended externally according to the requirements of Chapter VIII of the Regulation. The dissertation defended within one year of the end of the doctoral studies is deemed defended in time.

10. A doctoral student may submit their dissertation for defence when:

10.1. has passed all the examinations and completed other works provided for in the work plan of doctoral studies;

10.2. while preparing a dissertation provided for in Paragraph 1 of this Procedure, has published at least three articles (where he is the only author or the main co-author in at least one of them) on the main research findings published or having the DOI or other proof of acceptance for publishing in peer-reviewed research journals, or in a research monograph. When during the doctoral studies the co-authorship of the doctoral student on an invention patent (or a patent application after expert evaluation in accordance with the procedure established in the Regulation) related to the topic of their dissertation at the European Patent Office (EPO), the United States Patent and Trademark Office (USPTO), Japan Patent Office (JPO), Korean Intellectual Property Office (KIPO), or China National Intellectual Property Administration (CNIPA) may be equalled to one article.

10.3. has presented the findings of their research in at least two international academic events;

10.4. has completed the dissertation.

11. The doctoral student together with the academic supervisor submits a request to defend the thesis and its manuscript to the Doctoral Committee. Having received the manuscript of the dissertation and the doctoral student's application to defend the dissertation, the Chairperson of the Committee shall, within no later than two weeks (except in July and August), convene a meeting of the Committee at which the reviewers of the dissertation shall be appointed. As reviewers and members of the Dissertation Defence Panel can be appointed active researchers, experts of dissertation topic, corresponding to at least the minimum qualification requirements for persons seeking to occupy the position of senior researcher and attestation requirements set for this position for the period of 5 years set out in the Regulations for the organization of competition and attestation for the positions of lecturers and scientific (art) employees of Vilnius University. Between reviewers and the author of the dissertation, their academic supervisor, or their consultant (a research consultant when the dissertation is defended externally) shall be no conflicts of interest. Reviewers may not have co-

authored publications with the author of the dissertation and may not have co-authored publications with the academic supervisor (a research consultant when defending the dissertation externally) of the author of the dissertation in the last five years. The reviewers shall give a detailed examination of the paper and submit their reviews in writing within a month, and, if possible, present their reviews at the meeting of the Committee.

12. The doctoral student shall present the dissertation at a meeting of the doctoral student's Unit in the presence of the academic supervisor and the consultant of the doctoral student. Following the procedure set out at the Institution, the researchers of the Unit shall review the dissertation and the research articles published by the doctoral student, the competencies of the doctoral student, their acquired competence as a researcher, and shall submit their conclusions to the Committee.

13. Chairperson of the Committee, having received the protocol of the consideration in the Unit and written reviewers opinion, no later than within two weeks (except for the months of July and August) organizes a meeting of the Committee, where after evaluation the dissertation, published scientific articles on its topic, passed exams, participation in scientific events and internships, the Committee can accept the following decisions:

13.1. the dissertation has been properly completed and meets the requirements prescribed, the doctoral student has fulfilled the work plan of doctoral studies, and the dissertation, in the opinion of the reviewers and the members of the Committee, may be submitted for defence;

13.2. the dissertation needs revision. The dissertation shall be returned to the author of the dissertation, and the revised dissertation shall be repeatedly discussed at a meeting of the Committee within one month after the reviewers submit their conclusions on the revised dissertation to the Committee;

13.3. the dissertation does not meet the requirements prescribed and shall be returned to the author of the dissertation for further elaboration.

14. In case the dissertation meets the requirements prescribed, the Committee sets the date and place for the defence of the dissertation, determines the language of the defence, and, in exceptional cases, gives reasons for the decision to pursue the defence of the dissertation in a closed meeting of the Dissertation Defence Panel, establishes the Dissertation Defence Panel consisting of five members, appoints one of its members the Chairperson of the Panel and submits it for approval to the Rector of the University. Members of the Dissertation Defence Panel must be engaged in research relating to the topic of the dissertation submitted for defence. The order of the Rector of the University shall specify the date and place of the defence of the dissertation.

15. The Dissertation Defence Panel is a panel of researchers who, having reviewed the dissertation submitted for defence and assessed its quality, its compliance with the requirements for dissertations and the competency of the doctoral student, decide whether the candidate meets the requirements for being awarded the doctoral degree.

16. Members of the Dissertation Defence Panel can be appointed active researchers, experts of dissertation topic, corresponding to at least the minimum qualification requirements for persons seeking to occupy the position of senior researcher and attestation requirements set for this position for the period of 5 years set out in the Regulations for the organization of competition and attestation for the positions of lecturers and scientific (art) employees of Vilnius University. There shall be no conflicts of interest between the members of the Dissertation Defence Panel and the author of the dissertation, their academic supervisor, or their consultant (a research consultant when the dissertation is defended externally). A member of the Dissertation Defence Panel may not have co-authored publications with the author of the dissertation, and more than half of the members of the Dissertation Defence Panel may not have co-authored publications with the academic supervisor (a research consultant when defending the dissertation externally) of the author of the dissertation in the last five years. At least one member of the Dissertation Defence Panel has to be from a foreign research and studies institution.

17. Within no less than 60 calendar days (or another term set out by the Institution) before the scheduled defence of the dissertation, the Committee or the school of doctoral studies shall submit to the Doctoral Studies Division of the University the manuscript of the dissertation (sent by email) and the application of the author of the dissertation to defend the dissertation, addressed to the Rector of the University. The following documents shall be attached:

- 17.1. copies of the master qualification diploma or of a higher education diploma equivalent to it, and of their supplements;
 - 17.2. the doctoral studies examination report (if it is not kept at the University);
 - 17.3. a list of research papers published on the topic of the dissertation and their copies (in case a paper is not published yet, it is mandatory to attach a copy of the confirmation of the editorial board confirming acceptance of the article for publication);
 - 17.4. the Curriculum Vitae and a description of the research and creative activities of the author of the dissertation;
 - 17.5. protocols of the deliberation of the dissertation at the unit of the Institution and the Committee;
 - 17.6. consents of the researchers to act as members of the Dissertation Defence Panel and the Chairperson;
 - 17.7. lists of research papers of members of the Dissertation Defence Panel and its Chairperson as proof that they meet the established qualification requirements (if this information is requested by the Doctoral Studies Division).
18. The Doctoral Studies Division, within no later than 30 days before the defence of the dissertation, shall:
 - 18.1. in cooperation with the author of the dissertation ensure that the dissertation is submitted to the members of the Dissertation Defence Panel and the Library of the University (except for the dissertations that will be defended in a closed meeting);
 - 18.2. publish a notice on the forthcoming defence of the dissertation on the website of the University. The notice shall specify the following: full name of the author of the dissertation, the place where the dissertation was completed, the academic supervisor (or consultant, if the dissertation is defended externally) and the members of the Dissertation Defence Panel (academic degree, full name, field (branch) of research represented), the title of the dissertation, the place and date of the defence and the address of the University website where the dissertation can be accessed (except for the dissertations to be defended in a closed meeting);
 - 18.3. provide information on the forthcoming defence of the dissertation to the Research Council of Lithuania in accordance with the procedure established by it.
 19. The members of the Dissertation Defence Panel shall review the dissertation, indicate its strengths and weaknesses, assess the novelty, relevance and originality of the dissertation, and express an opinion whether the paper meets the requirements for dissertations; the Dissertation Defence Panel shall submit their written comments on the dissertation no later than five days before the defence of the dissertation (also possibly by email) to the Doctoral Studies Division which shall forward them to the doctoral student without delay. The comments shall be submitted in a printed form before the defence of the dissertation.
 20. The defence of the dissertation shall be held at an open meeting of the Dissertation Defence Panel (except when a closed meeting is scheduled) according to the Regulation of the Dissertation Defence Panel (Annex 2 to the Regulation), and shall be audio-recorded. The defence of the dissertation may be conducted in Lithuanian or another language, with interpreting provided if necessary. The language for the dissertation defence procedure shall be determined by the Committee. The meeting shall be chaired by the Chairperson of the Dissertation Defence Panel. The meeting shall be considered lawful if attended by more than half of the members of the Dissertation Defence Panel (including those participating by means of teleconference). The reviews of the members of the Dissertation Defence Panel not attending the meeting and of other specialists shall be read at the meeting. The members of the Dissertation Defence Panel shall pass their decisions in accordance with the principles of objectivity, impartiality, transparency and legality, as well as personal responsibility for one's deeds and decisions.
 21. In the case that the matters analysed in the dissertation include information which is considered a commercial secret in accordance with the provisions laid down in the Republic of Lithuania Law on Legal Protection of Commercial Secrets or is related to national security in accordance with the provisions laid down in the Republic of Lithuania Law on the Basics of National Security, the dissertation shall be defended at a closed meeting. The decision as to who may attend the meeting,

apart from the author of the dissertation, their academic supervisor, the consultant, the Chairperson of the Dissertation Defence Panel and its members, shall be taken by the Committee.

22. During the meeting of the Dissertation Defence Panel, the author of the dissertation shall present the key research results and the conclusions of their paper and indicate their contribution to the publications presented in the dissertation. The members of the Dissertation Defence Panel present a well-reasoned review of the scientific level of the dissertation, the novelty and originality of the research results, the reliability and validity of conclusions, and note the strengths, weaknesses or inaccuracies of the paper, as well as the research competency of the author of the dissertation (the latter is noted during its defence). The author of the dissertation answers the questions asked and comments on the provided feedback. During the discussion, the author of the dissertation shall substantiate the conclusions of their dissertation and exhibit their competency as a researcher.

23. Following the discussions with the author of the dissertation, the members of the Dissertation Defence Panel shall, with the author of the dissertation and the other participants of the meeting not present, and each individually having voiced the arguments for their decision, decide in an open vote whether the author of the dissertation can be awarded the doctoral degree. The members of the Dissertation Defence Panel participating in the dissertation defence by means of teleconference shall also vote. The decision to award the doctoral degree shall be passed if more than half of all the members of the Dissertation Defence Panel vote in favour of the decision. If a decision is passed not to award the doctoral degree, the arguments should be stated in the Minutes of the vote. The Minutes of the vote shall be signed by all physically present members of the Dissertation Defence Panel.

24. Within two weeks from the defence of the dissertation, the Doctoral Studies Division shall present one copy of the defended dissertation (except for the dissertations defended in a closed meeting) to Martynas Mažvydas National Library of Lithuania and the doctoral student shall publish the dissertation and its summary on the Lithuanian Academic Electronic Library (eLABa).

25. Within one month from the defence of the dissertation, the Doctoral Studies Division shall submit the results of the defence to the Research Council of Lithuania by uploading the relevant data on the dissertation database managed by the Research Council following the procedure established by it.

26. In case the Dissertation Defence Panel decides that the doctoral student does not qualify for the doctoral degree, a revised and/or supplemented dissertation may be submitted for defence not earlier than after one year. In that case, the doctoral degree shall be acquired externally, in accordance with the requirements laid down in Paragraphs 28 – 35 of this Procedure.

27. Where instances of scientific dishonesty are established, the dissertation cannot be defended.

OBTAINING THE DEGREE OF DOCTOR OF SCIENCE EXTERNALLY

28. A doctoral degree may be sought externally by a person who has a master qualification degree or a higher education degree equivalent to it (hereinafter the 'external student'). The external student must have completed a dissertation summarising the research published in at least two peer-reviewed research articles referred to in Paragraph 10.2 of this Procedure, or must have published a monograph without any co-authors and have presented their research results at scientific events. The opportunity to defend a dissertation on the basis of a set of research articles meeting the requirements set out in Paragraph 3 of this Procedure shall only be given to persons who have studied doctoral studies at the University or at an institution with the right to conduct joint doctoral studies.

29. Alongside with an application to defend the dissertation addressed to the Rector of the University, the external student shall submit the following documents:

29.1. the manuscript of the dissertation or a published research monograph;

29.2. a list of research publications and their electronic copies;

29.3. copies of the master qualification diploma (or of a higher education diploma equivalent to it) and its supplements;

- 29.4. an examination protocol on the passed doctoral examinations (if any);
- 29.5. the Curriculum Vitae and a description of the research and creative activities.
30. The Doctoral Studies Division shall register the external student's application and the supporting documents and, having concluded that the documents meet the requirements of the Regulations, shall submit the documents to the Rector of the University (or their authorised Pro-Rector) who shall transfer the application with the supporting documents to the Committee of the respective field of research.
31. The Committee shall appoint at least two reviewers to evaluate the level of completion of the submitted dissertation, and no later than within three months from receipt of the external student's application, organise a meeting of the Committee at which the Committee members examine the conclusions of the reviewers and the supporting documents and establish whether the paper meets the requirements for a dissertation.
32. In case the Committee decides that within the period of one year the dissertation may not be properly prepared for the defence, a repeat application to defend the dissertation may be submitted no earlier than one year after the Committee decision
33. Having decided that the submitted or revised dissertation of the external student may be recommended for defence, the Committee shall:
- 33.1. appoint and submit to the Rector of the University for approval a research consultant (the research consultant must be a researcher in the same field of research);
- 33.2. establish the course units to be taken in doctoral studies and the terms of their examinations, whereas in case the examinations were successfully passed, pass a decision regarding their crediting;
- 33.3. if necessary, set up an examination commission(s);
- 33.4. set the final date for the defence of the dissertation that cannot be later than within one year from the date of the decision of the Committee.
34. The examinations of the external student shall be organised following the requirements of Chapter V of the Regulation, and the dissertation shall be reviewed and defended following the requirements of Paragraphs 13 – 27 of this Procedure.
35. The expenses of the University and/or the Institution that are directly related to obtaining the doctoral degree shall be covered by the external student, unless the legal acts of the University or of the Institution sharing the right to conduct doctoral studies with the University provide otherwise.