

# Guidelines for doctoral procedures at the Department of Physics



TECHNISCHE  
UNIVERSITÄT  
DARMSTADT

Fachbereich Physik

These guidelines are intended to simplify the interpretation of the doctoral regulations of the Department of Physics and answer frequently asked questions about the examination procedure.

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## 1. Pre-publications from dissertations and self-citation

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The scientific discourse of research results is essential within the scientific community. For this reason, the Department of Physics encourages its doctoral candidates to submit their results to peer review at an early stage. The publication guidelines of the TU Darmstadt must be observed. The department regards this procedure as an important quality standard and as common practice in science.

Therefore, **pre-publication** of results of a dissertation is not an obstacle to their presentation in the dissertation. This applies both to monographs and to cumulative dissertations, for which the pre-publication of the listed articles is mandatory. In both cases, **the verbatim inclusion of material from one's own previous publications in the dissertation (self-citation)** is also permissible. However, in the interests of transparency, it must be disclosed as clear and unambiguous as possible if a text is based on one's own publication; at least it must be stated in the dissertation where and to what extent the reader can expect sections quoted verbatim or word-for-word. The exact referencing of the publication at the beginning of a chapter in the thesis is considered sufficient. If the text refers to a publication with several authors, either only those parts of the publication that were produced independently should be used, or it should be clearly identified who produced the corresponding data or text sections. It is the responsibility of the doctoral candidate to clarify the necessary publication rights with the rights holders responsible for the pre-publications.

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## 2. Synopsis in cumulative dissertations

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One type of dissertation that requires the pre-publication of results is the cumulative dissertation. In this case, the publications, which must be listed in full in the dissertation, must be preceded by **‘a detailed synopsis in which the scientific frame of reference is presented and the individual publications are categorized in an overall context’**, cf. TU Darmstadt's Doctoral Regulations §9(4). It must be possible to read the synopsis coherently and to understand the topic, research question, methodology and contribution of the dissertation without having to read all publications in detail.

**The synopsis has an important impact in the assessment of a cumulative dissertation.**

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## 3. Publications in cumulative dissertations

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In addition to the detailed synopsis, a cumulative dissertation consists of **‘a collection of three or more publications published or accepted for publication’** (Special Regulations of the Department of Physics). The number three represents the minimum number (e.g. conceivable in the case of extensive and possibly outstanding publications with an enormous personal contribution). As a rule, however, especially if the scientific contribution is spread over several authors, a correspondingly higher number of publications is assumed. Naturally, a correspondingly higher number of publications must also be assumed if co-authored publications are to be included in more than one (cumulative) dissertation, whereby the department assumes that two dissertations differ significantly in terms of the independent work assigned to the individual doctoral candidates (see chapter 4) and often also in

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terms of the publications used. In addition to the above-mentioned minimum of three peer-reviewed publications, a small number of articles that are still being submitted, reviewed or revised, or articles that have been published as non-peer-reviewed publications or preprints, may also form part of the cumulative dissertation. Publications can only be included in a cumulative dissertation if the doctoral candidate has made a significant contribution.

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#### 4. Erklärung der zu bewertenden selbständigen Leistungen in kumulativen Dissertationen

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A dissertation must contribute to the further development of scientific knowledge as an **‘independent achievement that fulfils scientific requirements’**, cf. Doctoral Regulations §9(1). In order to cover the assessment of joint pre-publications by several authors and in particular publications that are not only included in one dissertation, the individual contribution must be stated clearly, especially in cumulative dissertations. A declaration by both the doctoral candidate and all co-authors as well as the academic supervisor (usually the reviewer) must be attached, from which the independent work to be assessed can be determined on the basis of comprehensible criteria that enable a clear delimitation of the respective share. The doctoral candidate's contribution to the publication must be explicitly stated.’, cf. doctoral regulations §9(5). This applies analogously to monographs.

**Example:** *The paper “Title of the Paper” was published as a full research paper at the “Journal Name”. It constitutes a joint work of A, B, C and D. A is corresponding and leading author, A led the overall research design, management and writing process of the paper. All authors contributed the literature review together where A and B took most of the work. The research design and choice of the theoretical model was done by A and B together. A planned and conducted the interviews and derived the concept (together with D), while B and C implemented the prototype. C was mainly responsible for data processing, preliminary empirical work, and contributed to the data analysis with A and D. The results and discussion were written by A and B equally, where A focused on the technical aspects, B focused on the evaluation. The central implications of this work were mainly derived by A. D was a general advisor of this work and contributed with continuous feedback during all phases of the paper writing process. All authors agree with the use of their joint paper as part of A’s [and B’s] cumulative dissertation.*

**The dissertation itself or the synopsis must also include the declaration of individual achievements and explicitly mark your own achievements.**

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#### 5. Composition of the examination committee

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The examination committee at the Department of Physics consists of at least five people: The chairperson, the reviewers (first reviewer, co-reviewers) and at least two further examiners in accordance with Doctoral Regulations §4(1) lit. c. At least one of the reviewers must be a full-time professor in the Department of Physics.

The members of the examination committee - not including the chairperson - should not all belong to the same institute and furthermore not all belong to the same genre (theory/experiment). As a rule, an examination committee member should not summarize both functions. An application for an exception can be approved by the Doctoral Regulations Board in justified cases.

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#### 6. Public lecture and course of the disputation

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The defence of the dissertation takes place as part of a disputation. This is preceded by a public lecture which opens the examination discussion. The public lecture, in which the research topic is to be presented concisely, should be orientated towards a length of 20 minutes.

The subsequent 60-minute disputation is divided into two major parts: The first 30 minutes are focused on the dissertation itself. At the start, the second reviewer is given the opportunity to ask questions for up to 15 minutes,

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followed by a 15-minute session of open questions from all examiners and authorized examiners present on the topic of the thesis.

The latter 30 minutes are intended to demonstrate understanding of physics in general. Here, those examiners who have not written a report are given the opportunity to question you first. This can take place one after the other in two fixed blocks of time. The chairperson moderates both rounds of questions with a view to the requirements.

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