University of Tübingen exam regulations for the study program in Mathematical Physics culminating in an examination for a Master of Science (M.Sc.) degree – General Provisions –

In accordance with §§ 19 (1)(2)(7, 9), 32 (3) LGH as amended, the University of Tübingen Senate on 09.02.2017 passed the General Provisions of these exam regulations for the study program in Mathematical Physics at the University of Tübingen culminating in an examination for a Master of Science (M.Sc.) degree.

Approved by the President and Vice-Chancellor on 30.03.2017.

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#### I. General Provisions

## § 1 Structure of the Master's program

- (1) <sup>1</sup>The degree program in Mathematical Physics culminating in an examination for a Master of Science (M.Sc.), (hereinafter: Master's program) uses the European Credit Transfer and Accumulation System (ECTS), i.e., all components of the program are allocated ECTS credit points, the number of which is in line with the student's foreseeable workload. <sup>2</sup>One credit point assumes a workload for the students of 30 hours in class and in private study, unless otherwise stipulated in the module handbook.
- (2) <sup>1</sup>The Master's program has a modular structure. <sup>2</sup>The type, contents and workload of the required modules and the credit points allocated to them are set out in the Special Provisions of these exam regulations and/or in the module handbook.
- (3) The Master's program is tied to a University system of examinations.
- (4) <sup>1</sup>The program encompasses 120 ECTS credit points, of which 30 are given for the Master's thesis module and 90 for the other subject-relevant coursework. <sup>2</sup>In addition to the Master's thesis, an oral final examination at the end of the Master's program, an oral examination on the contents of the Master's thesis and/or a final colloquium on the Master's thesis may be required; this will be set out in the exam regulations or in the module handbook as a pieces of assessed work (and expressly described as such in each case).

<sup>3</sup>For the Master's degree, 300 ECTS credit points are required – including the student's preceding studies up to his/her first professional degree.

- (5) <sup>1</sup>The regular duration of study for this program up to the obtaining of the academic degree is four semesters, including all the required coursework and assessment as well as any other required elements such as excursions and internships. <sup>2</sup>All coursework and assessed work in these exam regulations can be carried out ahead of the appointed time, if the student meets the necessary prerequisites and there is sufficient capacity. <sup>3</sup>In tiered programs leading to a Bachelor's degree and a Master's degree building upon it, the overall regular duration of study is set at a maximum of five years.
- (6) The Special Provisions may require students to carry out a practical excercise serving the aims of the course. <sup>2</sup>A period of study abroad may be provided for in the Special Provisions of these exam regulations.

#### § 2 Graduation

The academic degree "Master of Science" (abbr. "M.Sc.") is awarded on the basis of a successful completion of a Master of Science examination (hereinafter: Master's examination).

#### § 3 Subjects

<sup>1</sup>A Master's-level subject is studied in the Master's program. <sup>2</sup>Elective modules are listed in the Special Provisions of these exam regulations and are to be specified in the module handbook published for the semester.

#### § 4 Board of examiners

- (1) <sup>1</sup>The Faculty of Science forms an examination board for the organization of exams and all other tasks not expressly assigned elsewhere by these exam regulations. <sup>2</sup>The head of the board of examiners, his/her deputy on the board, the board members and their deputies are each appointed by the Faculty. <sup>3</sup>The board of examiners is composed as follows:
- 1. four members of the Faculty's full-time academic teaching staff,
- 2. two other members of the Faculty's academic staff,
- 3. two students (in an advisory role).

<sup>4</sup>Only one professor may be head of the board or its deputy. <sup>5</sup>The head of the board will usually conduct the board's active business. <sup>6</sup>In addition, the board may transfer revocably certain tasks to the head of the board, insofar as this is not expressly barred; not, however in decisions on appeals. <sup>7</sup>The board of examiners may receive the support of an examinations office to carry out its active business. <sup>8</sup>Decisions by the board of examiners are passed with a

majority of the board members' votes; in the event of a tie, the head of the board of examiners casts the deciding vote. <sup>9</sup>There is no limit to the number of terms for which a board member may be appointed; if a member withdraws before the end of his/her term of office, a new member is appointed for the remainder of the term of office; members of the board remain in office after their term of office expires until new members are appointed.

- (2) The board members' term of office is three years, that of the student on the board is one year.
- (3) ¹The board of examiners ensures that the provisions set out in these exam regulations are met. ²The board is to report regularly to the Faculty on the development of examinations and durations of study including the time to finish Master's theses, as well as reporting on the distribution of subject grades and overall grades. ³The board of examiners must ensure that all coursework and assessment set out in these exam regulations can be carried out by students within the prescribed time periods. ⁴To this end, students must be informed in good time both of the nature and number of required coursework units and the assessed coursework to be successfully completed, as well as on the deadlines by which these must be completed, and similarly the dates for the issue of topics for, and submission of, Master's theses. ⁵The board of examiners must also ensure that protective legal provisions and the provisions under § 32 paragraph (4)(5) LHG are met.
- (4) <sup>1</sup>Board members have the right to be present as observers during examinations. <sup>2</sup>The University President or a representative appointed by him/her also has the right to be present at examinations.
- (5) <sup>1</sup>Meetings of the board of examiners are not open to the public. <sup>2</sup>Members of the board of examiners, their representatives, and any third parties involved are obliged to maintain confidentiality. <sup>3</sup>If they are not state employees, the head of the board must pledge them to maintain confidentiality.
- (6) <sup>1</sup>Decisions by the examination board or its head which negatively affect the candidate must be communicated in writing at the earliest possible opportunity to the candidate, explaining the decision. Instructions on the right to appeal will be included. <sup>2</sup>Appeals must reach the examination board in writing within one month. <sup>3</sup>If the board of examiners does not remedy the appeal, it must be presented to the University's Vice-President of Academic Affairs for decision.

#### § 5 Examiners and observers

(1) <sup>1</sup>The board of examiners appoints examiners and observers - insofar as required by these exam regulations - for each exam. <sup>2</sup>The board may delegate appointments to the head of the

board. <sup>3</sup>Suggestions by the candidate for potential examiners may be taken into account; however the candidate does not have the right to have his/her suggestion taken into account. <sup>4</sup>The observer is to take minutes of the proceedings. <sup>5</sup>Only persons with a degree in the relevant degree course or equivalent may be appointed as observers.

- (2) <sup>1</sup>Only academic teaching staff, academics with habilitation, and other academic staff appointed by the President's Office at the suggestion of the Dean's Office are authorized to conduct examinations. <sup>2</sup>Other members of the academic staff, such as assistant lecturers, may act as examiners under exceptional circumstances only, if there are not enough examiners available under (3) and if they have a qualification in the examined subject which is at least the equivalent of the degree for which the examination is taking place.
- (3) <sup>1</sup>For course-related exams, the member of teaching staff under (2) who taught the relevant classes is the examiner unless some other arrangement is made; the exams are conducted by one examiner, unless some other arrangement is set out in the exam regulations or the module handbook. <sup>2</sup>If an examiner is absent, the examination board appoints another qualified person under (2). <sup>3</sup>If a repeat exam is conducted on course-related assessed coursework within the framework of the regular exam timetable, then the examiner is the member of teaching staff scheduled for this regular exam date. If the repeat exam is not conducted within the framework of regular exam dates, a new examiner will be appointed.
- (4) § 4 (5)(2) and (3) apply for examiners and observers accordingly.

## § 6 Crediting of studies, coursework, and assessed work

(1) <sup>1</sup> Coursework, assessed work, degrees, and semesters of study completed in study programs at the University of Tübingen, other state-administered or state-recognized institutions of higher education and universities of cooperative education in Germany or in study programs at state-administered or state-recognized institutions abroad will be credited if the competencies thus obtained show no significant difference from the coursework or degrees they replace. <sup>2</sup>This accreditation serves the continuation of studies, the completion of exams, the commencement of further studies, or admission to a doctoral program. <sup>3</sup>Insofar as equivalency agreements between Germany and other countries favor students from other countries in a way not in accordance with (1) and (2), the equivalency agreements take precedence; in addition accords struck within the framework of university partnerships, collaboration agreements and dual-degree programs must be taken into account. <sup>4</sup>Intermediate exams completed in the same or in a related study program at the University of Tübingen or another German institution of higher education will be recognized.

- (2) Participation in recognized correspondence courses will be recognized as the equivalent of on-campus studies and credited to the duration of study accordingly.
- (3) <sup>1</sup>Knowledge and skills obtained outside of the higher education system may be credited to studies if:
- 1. at the time of recognition, the student met the requirements for admission to university,
- 2. the knowledge and skills to be credited to studies are equivalent in content and standard to the coursework and assessment they are to replace, and
- 3. the criteria for recognition within the framework of accreditation have been assessed.
- <sup>2</sup>Knowledge and skills obtained outside of the higher education system may be credited to studies to a maximum of 50 percent of a university study program. <sup>3</sup>There must be a careful check to ensure that knowledge and skills obtained outside the higher education system are, in the nature and volume of coursework they replace, equivalent as far as the competencies obtained go. <sup>4</sup>When the decision is made, the form in which the competencies were learned must be taken into consideration.
- (4) <sup>1</sup>If coursework and assessment are recognized, the grades are to be transferred insofar as the grading schemes are comparable and taken into account in the overall grade according to the key to grading set out in § 14. <sup>2</sup>If the grading schemes are not comparable, a note is made of a "pass," and in this case the result will not be included in the calculation of module grades or the overall grade and the rules regarding its calculation are applied in the light of this fact. <sup>3</sup>Accredited grades may be identified as such in the Transcript of Records. <sup>4</sup>In addition, the board of examiners may establish regulations for the conversion of grades given at another institution of higher education, particularly those of a partner university.
- (5) <sup>1</sup>It is up to the applicant to provide the necessary information about the work to be accredited. <sup>2</sup>The onus is on the office carrying out the accreditation process to show that an application for accreditation does not meet the requirements. <sup>3</sup>Decisions on academic certificates from outside Germany are to be made with reference to the assessment criteria set out by the Zentralstelle für ausländisches Bildungswesen at the secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder of the Federal Republic of Germany (ZAB).
- (6) <sup>1</sup>For credit points from senior studies (Kontaktstudien) to be credited to a university degree program, paragraphs (1), (2)(4)(1-3) and (5) apply accordingly, if the prerequisites for admission to university were met at the time of crediting.

## § 7 Purpose of examination

<sup>1</sup>The Master's examination comprises a further professional qualification degree which goes beyond the first degree in the field of Mathematical Physics. <sup>2</sup>In completing the Master's examination, students demonstrate that they have obtained well-founded basic knowledge beyond that gained in a first degree as well as a systematic orientation and in-depth proficiency in the field of Mathematical Physics, and have developed the ability to process academic questions in their Master's subject independently using the relevant methods.

### § 8 Workload and nature of the Master's examination

- (1) <sup>1</sup>Along with the required coursework and other possible required additional work, the Master's examination consists of course-related assessed work as well as the Master's thesis and an exam which may be required at the end of the Master's degree studies, any required oral exam on the contents of the Master's thesis and/or a final colloquium which may be required as part of the thesis process. The Master's examination has been passed when these have been successfully completed. <sup>2</sup>Regulations are set out in the Special Provisions and/or in the module handbook as to which module-specific assessment is relevant for the final grade and must be completed in which modules.
- (2) The type and workload of the assessed coursework and the demands of the examinations as well as any other, particular requirements for admission are set out in the Special Provisions of these exam regulations.
- (3) The module handbook contains the following information on the individual modules:
- 1. Name of the module,
- 2. Content and goals,
- 3. Teaching method(s) according to § 4 (1) of the Special Provisions,
- 4. Prerequisites and limitations on admission,
- 5. Interchangeability of module and recommended semester,
- 6. The credit points set out in these exam regulations, the requirements for obtaining them, in particular the demands of each examination, as well as whether grades are given,
- 7. The frequency with which modules are offered,
- 8. Workload and duration of classes.

#### III. For-degree coursework and course-related assessed work

#### § 9 Obtaining ECTS credits

(1) <sup>1</sup>The ECTS credits designated to each class, module, or other coursework are to be allocated when all required assessed coursework and non-assessed coursework as well as

any required further work has been successfully completed. <sup>2</sup>ECTS credits are allocated for graded work regardless of the grade given, as long as it is "sufficient" or better.

- (2) <sup>1</sup>Regulations are set out in the Special Provisions and/or in the module handbook as to which assessed and non-assessed coursework and any further work is required and in which modules and classes assessed coursework must be completed. <sup>2</sup>If assessed coursework must be completed in a class or module, additional assessed and non-assessed coursework as well as further supplementary work may be required for the student to obtain the ECTS credits allocated to this class or module. <sup>3</sup>In those classes and/or modules in which no assessed coursework is required, the relevant ECTS credits are obtained via the completion of non-assessed coursework and any supplementary work.
- (3) The type, form, number and workload of the required coursework and/or assessed work and any supplementary work are to be basically agreed in such a way that the time required to complete it is in line with the ECTS credits assigned to the relevant class and/or the relevant module.

#### § 10 For-degree coursework and course-related assessed work

- (1) <sup>1</sup>Coursework consists of individual written, verbal, or practical work conducted by the students usually in connection with classes. <sup>2</sup>The coursework completed must be appraised by the person responsible for the relevant class. <sup>3</sup>Coursework may be provided for in an ungraded form.
- (2) ¹Module-specific assessment for the purposes of these exam regulations is the final assessment (including any relevant repeat assessment) in each module; it may also be calculated overall from several components. ²The Special Provisions of these exam regulations and/or the module handbook set out what type of final exam is to be completed in each module: Oral and/or written and/or practical. ³The Special Provisions of these exam regulations may also allow for other supervised assessed coursework, to be appraised according to the same standards. ⁴The Master's thesis and any associated oral Master's examinations, associated colloquia and oral exams on the contents of the Master's thesis are not module-specific.
- (3) The nature and workload of course-related assessed and non-assessed work and any supplementary work, as well as the time for its completion, must be made known to all students taking part by the person responsible for the class usually at the beginning of the class.
- (4) <sup>1</sup>If a candidate can show credibly, by presenting a doctor's certificate, that he/she is unable to complete assessed coursework in whole or in part in the form provided for due to

lingering or constant medical condition, impairment or disability, the head of the board of examiners will allow him/her an extension in which to complete the assessed coursework or equivalent assessed coursework in a different form, upon application by the candidate. <sup>2</sup>The same goes for coursework and any other relevant work. <sup>3</sup>This also applies in the event of illness of a child in the candidate's care.

- (5) ¹Students on leave are not entitled to attend classes or to take part in module-specific assessed coursework; differing provisions in cooperation agreements remain unaffected. ²Students on leave under § 61 (3) LHG (maternity leave, parenting leave, carer's leave) have the right to take part in classes and to carry out coursework and assessed work. ³The regulations governing admission and enrollment at the University of Tübingen, as amended, are paramount.
- (6) <sup>1</sup>The manner, content, and scope of the non-assessed coursework and module-specific or other assessed coursework, the requirements for examinations as well as any other required supplementary work and any further, particular requirements for admission may be set out in the module handbook. <sup>2</sup>However, provisions set out in the exam regulations take precedence over those set out in the module handbook.
- (7) The head of the board of examiners ensures that each exam date is announced in good time.

## § 11 Registration and admission to course-related assessed work

- (1) Students must register for every piece of module-specific assessment by a date set by the board of examiners in accordance with the provisions set out by the board of examiners.
- (2) <sup>1</sup>A student can only be admitted to module-specific assessment if he/she:
- 1. is enrolled at the University of Tübingen in the relevant Master's program, and
- 2. has not lost the right to be examined in the relevant Master's program or in a comparable degree program at an institution of higher education, and
- 3. has not failed, with no option to repeat, a Master's or final examination in the relevant degree program or in a comparable degree program at an institution of higher education, and
- 4. meets any further necessary prerequisites set out in the Special Provisions.

<sup>2</sup>Comparable degree programs are (including the corresponding teaching degree programs in their tiered structure) Bachelor of Mathematics, Master of Mathematics, Bachelor of Physics, Master of Physics, teaching-degree programs in Mathematics, teaching-degree programs in Physics, diplomas of Mathematics, diplomas of Physics; the board of examiners will decide on the comparability of other degree programs.

- (3) <sup>1</sup>The board of examiners will decide on admission to a piece of module-specific assessment. <sup>2</sup>If admission is denied, the student will receive written notification of this within four weeks. This notification must include reasons for the denial and instructions on the right to appeal. <sup>3</sup>Admission will be denied if:
  - 1. the requirements set out in (2) are not met, or
  - 2. the application is incomplete and the missing documents were not submitted on time.

<sup>4</sup>Admission may also be denied if the student in the relevant subject of the Master's program or in a comparable degree course under (2) is involved in a current examination process. <sup>5</sup>No other reasons for denial are permitted.

#### § 12 Verbal assessment

- (1) ¹Oral assessment may be conducted in the form of oral exams, presentations, colloquia. ²Other forms of assessment may be designated in the module handbook.
- (2) <sup>1</sup>During verbal assessment the candidate must demonstrate that he/she recognizes the interrelated themes of the field being assessed and is able to analyze particular issues within these interrelated themes. <sup>2</sup>Oral exams also aim to determine whether the candidate has broad-based basic knowledge. <sup>3</sup>In addition the candidate may be given the opportunity to nominate special themes as the object of his/her oral exam. <sup>4</sup>The duration of an oral examination is usually between 15 and 30 minutes per candidate. <sup>5</sup>The oral examination takes place in the presence of an observer.
- (3) <sup>1</sup>An official record must be kept of the main subject-matter and the main results of the oral exam. This official record must be signed by the examiner and, insofar as an observer is consulted, also by the observer. <sup>2</sup>The result of the oral examination is to be communicated to the candidate at the conclusion of the oral exam.
- (4) <sup>1</sup>The exams are not open to the public. <sup>2</sup>Provided there is no objection from the candidate, other students wishing to carry out the same assessment at a later exam date may be admitted to attend an oral exam as members of an audience, subject to the limits of the examination venue. <sup>3</sup>This admittance does not extend to the discussion of exam results, nor to the notification of these to the candidate.

## § 13 Written assessment

- (1) <sup>1</sup>Forms of written assessment are chiefly exams, project work. <sup>2</sup>Other forms of assessment may be designated in the module handbook.
- (2) <sup>1</sup>In exams and in other written work the candidate demonstrates that he/she is able to recognize a problem and, in a limited time using limited aids, is able to apply methods

appropriate to the subject to find ways of solving it. <sup>2</sup>The candidate may be given several tasks from which he/she chooses one or more to complete. <sup>3</sup>The duration of a written exam should usually be at least 60 minutes and not more than 240 minutes.

(3) <sup>1</sup>An official record must be kept of the proceedings of an exam, recording particular events, especially attempts by a candidate to influence the result by cheating or using unauthorized aids. <sup>2</sup>The official record must be signed by the invigilator.

## § 14 Grading of assessed work

(1) <sup>1</sup>Grades for individual assessed work are determined by the relevant examiners. <sup>2</sup>The following grades are to be used for grading assessed work:

1 = very good = an outstanding performance;

2 = good = a performance well above the average

requirements;

3 = satisfactory = a performance in line with the average

requirements;

4 = sufficient = a performance which, despite its failings,

nevertheless meets the requirements;

5 = insufficient = a performance which does not meet the

requirements due to considerable failings.

<sup>3</sup>For precise grading of assessed work, whole grades may be raised or lowered by a value of 0.3. <sup>4</sup>The grades 0.7, 4.3, 4.7 and 5.3 are not given.

(2) The grades in the modules are as follows:

average of 1.50 or less = very good average grade of 1.51 to 2.50 = good average grade of 2.51 to 3.50 = satisfactory average grade of 3.51 to 4.00 = sufficient average of 4.01 or more = insufficient

- (3) <sup>1</sup>If the final exam in a module consists of several graded components, the module grade is calculated from the average grades of the individual pieces of assessed coursework, weighted by credit points, unless otherwise set out in these regulations and particularly in the Special Provisions of these exam regulations. <sup>2</sup>This average takes into account whole numbers and the first two decimal places only; all further decimal places are deleted with no rounding.
- (4) <sup>1</sup>If coursework is assessed by several examiners, the grade will be calculated from the arithmetic mean of the individual assessments. <sup>2</sup>Paragraphs (2) and (3)(2) apply accordingly.
- (5) Calculation of the overall Master's grade is set out in § 21.

#### IV. Master's thesis

# § 15 Prerequisites for admission to the Master's thesis process and other possible oral examinations to be completed in the final phase of the program

Persons may be admitted to the Master's examination and any oral exam which may be required at the end of the Master's degree studies, oral exam on the contents of the Master's thesis and/or any final colloquium which may be required as part of the thesis process only if:

- 1. they meet the admission requirements according to § 11 (2), and
- 2. they meet any further subject-related admission requirements set out in the Special Provisions of these exam regulations.

#### § 16 Admission procedure

- (1) <sup>1</sup>The application for admission (Meldung) to the Master's examination and any oral exam which may be required at the end of the Master's degree studies, oral exam on the contents of the Master's thesis and/or any final colloquium which may be required as part of the thesis process must be submitted to the examination board in writing. <sup>2</sup>This application must include details of the relevant study program and the candidate's suggested examiner where appropriate. <sup>3</sup>The application must be accompanied by:
- 1. the student's Studienbuch or equivalent academic records, and
- 2. documentation that the requirements set out in § 15 (1-2) have been met, as well as
- 3. a declaration on whether the candidate has ever lost the right to take an exam in a Master's program or equivalent program under § 11 (2) at an institution of higher education or has ever failed, with no option to re-sit, a piece of module-specific assessment required by the exam regulations or a Master's or final examination or in a comparable degree program under § 11 (2) at an institution of higher education and whether he/she is currently involved in an examination process in the same or under § 11 (2) equivalent degree program.
- (2) If the candidate cannot provide documentation as required under (1) in the manner stipulated, the examination board can in individual cases allow evidence to be shown in some other way.
- (3) The board of examiners will decide on admission.
- (4) <sup>1</sup>The candidate is considered admitted if his/her application is not rejected within four weeks. <sup>2</sup>The application must be rejected if the requirements for admission have not been met. <sup>3</sup>Admission may also be denied if the student in the relevant Master's program or in a comparable degree course under § 11(2) is involved in a current examination process. <sup>4</sup>No other reasons for denial are permitted. <sup>5</sup>Reasons for rejecting an application must be given in writing.

#### § 17 Master's thesis

- (1) <sup>1</sup>The Master's thesis is a piece of assessed work. <sup>2</sup>It is meant to demonstrate that the author is able to process a problem independently and by applying academic methods within a set time and to present the results thus arrived at appropriately and in written form. <sup>3</sup>The topic must be drawn from the field of Mathematical Physics; generally it should be set by an examiner under § 5 in the second year. <sup>4</sup>If the student does not find a topic for his/her Master's thesis, the head of the examination board ensures, upon written application, that the student receives a topic for his/her Master's thesis in good time. <sup>5</sup>The topic is issued via the examination board; the time of issue and the topic must be recorded. <sup>6</sup>The student is to be given the opportunity to make suggestions for a Master's thesis topic; however the examination board is under no obligation to consider such suggestions.
- (2) <sup>1</sup>The time limit for writing a Master's thesis from the issuing of the topic to submission of the thesis is six months; the topic must be set out and the task must be formulated by the thesis supervisor in such a way that the Master's thesis may be completed within this time limit. <sup>2</sup>The deadline for submission may be extended upon application by the examination board if there is good reason.
- (3) <sup>1</sup>The student may choose to write the thesis in German or English unless otherwise set out in the Special Provisions of these exam regulations. The board of examiners will decide on applications to write the thesis in any other language. <sup>2</sup>The finished Master's thesis must be submitted to the examination board within the allotted time as two bound copies and in a file format determined by the examination board. <sup>3</sup>The time of submission must go on file. <sup>4</sup>Along with the printed text, the Master's thesis may contain multimedia parts on electronic data storage media, if the topic requires it. <sup>5</sup>The process of evaluation must be completed 4 weeks at the latest after submission of the thesis; it is the examination board's task to supervise this deadline. <sup>6</sup>If examiners are prevented from keeping the deadline due to illness or some other circumstance, the examination board may appoint other examiners in this respect.
- (4) The candidate must include with the submitted Master's thesis a signed declaration in which he/she ensures that he/she wrote the thesis independently, did not use any sources or resources other than those cited, that he/she has clearly indicated as such all information taken from other works either verbatim or paraphrased and that the thesis has not been submitted as a whole or in any significant part as part of any other examination process, and that he/she has not published the thesis as a whole or in any significant part, and that the copy submitted in electronic file form is identical in content to the bound copies submitted.

- (5) <sup>1</sup>The Master's thesis is assessed by two people as examiners; one of them may be the thesis supervisor. <sup>2</sup>§ 14 (1), and insofar as an assesment by more than one person is required, § 14 (4) apply accordingly. <sup>3</sup>If assessment by two people is required and the individual assessments diverge by more than a whole grade as defined in § 14 (1)(2) or if one is "insufficient," the head of the examination board must obtain a further assessment from a further examiner.
- (6) <sup>1</sup>For any oral exam which may be required at the end of the Master's degree studies, oral exam on the contents of the Master's thesis and any final colloquium which may be required as part of the thesis process, the rules for oral exams apply, unless otherwise set out in the Special Provisions of these exam regulations or in the module handbook. <sup>2</sup>They are assessed by one examiner and take place in the additional presence of an observer, however the examination board may appoint a second examiner instead of an observer for a specific examination; for grading, § 14 applies.

## V. Passing/ Failing assessment

#### § 18 Passing/ Failing exams

- (1) <sup>1</sup>A piece of assessed work passes if it is given the grade of 4 (sufficient) or better; a final exam in a module comprising several graded components passes if each piece of assesment has passed. <sup>2</sup>The Master's examination and any oral exam which may be required at the end of the Master's degree studies, oral exam on the contents of the Master's thesis and any final colloquium which may be required as part of the thesis process pass if they are given the grade of 4 (sufficient); each of these pieces of assessed work must pass.
- (2) ¹If the candidate fails a piece of assessed coursework or the Master's thesis, the head of the examination board communicates this to him/her, including information on the right to appeal and on whether and to what extent the assessment may be repeated. ²Apart from cases of failure in the Master's examination, notification of assessment results may be announced in other ways. ³For any oral exam which may be required at the end of the Master's degree studies, oral exam on the contents of the Master's thesis and any final colloquium which may be required as part of the thesis process, the provisions for the Master's thesis set out in (1) and (2) apply accordingly.
- (3) <sup>1</sup>If a candidate fails a piece of assessed work with no option to re-sit, he/she may apply for a certificate detailing the assessed and (where appropriate) non-assessed coursework he/she has completed along with the grades given as well as the pieces of assessment not achieved, and showing that the candidate did not pass. The application must be

accompanied by appropriate documentation and proof that the candidate's enrollment has been terminated. <sup>2</sup>This still applies when the candidate's right to be examined has expired.

## VI. Repetition of a failed exam

## § 19 Repetition of course-related assessed work

- (1) <sup>1</sup>Subject-related assessment which results in a fail or which is considered a fail may be repeated twice. <sup>2</sup>Registration according to § 11 (1) is considered to be conditional registration for the corresponding repeat exam. <sup>3</sup>In a repeat exam, only assessment given a grade lower than "sufficient" (4.0) in the previous exam may be repeated; the grades given for the other pieces of assessment in the previous exam are taken into account in the calculation of the grade.
- (2) <sup>1</sup>The repeat exam must be taken in observance of any deadlines set out in the exam regulations for the Master's examination in the same semester or in the semester following the fail in the first exam or at the latest in the semester after that; it is usually conducted within the time and content framework of the scheduled regular exams. <sup>2</sup>Failure to re-sit a failed exam will result in a grade of "insufficient" (5.0) unless the failure to re-sit was not the fault of the student.
- (3) If the failed exam or piece of assessment was conducted at least six weeks before the start of lectures in the following semester and if passing a repeat exam is required for admission to a piece of assessment in the following semester or for attendance at a class in the following semester, the student must be given the opportunity upon written application to the examination board to re-sit the failed exam in good time so as to be able to be admitted to the assessment or attend the class.
- (4) There must usually be a period of at least four weeks between notification of results in the first exam and the repeat exam.
- (5) <sup>1</sup>In the case of a repeat exam which is not conducted within the framework of regular exams in the following semester, the type of of assessment to be completed may diverge from the type of assessment set out in the subject-specific provisions, particularly those in the module handbook, insofar as the subject-specific circumstances require it. <sup>2</sup>The student must be notified of the type and volume of assessment to be completed in the repeat exam at the time of notification of the repeat exam date at the latest.
- (6) Assessment resulting in a pass cannot be repeated.

# § 20 Repetition of the Master's thesis and other possible oral examinations to be completed in the final phase of the program

- (1) ¹A Master's thesis which has failed or which counts as failed may be repeated once; there can be no second repetition. ²The application for a repetition must be submitted two months at the latest after the exam result comes into force; if the student fails to apply in time, his/her right to be re-examined expires, unless the failure to apply is not the fault of the student. ³The topic may be rejected only once and that only within the first 2 months of the time allotted for the writing of the thesis; in this case, the allotted time period for the writing of the thesis begins again from the start. ⁴In the case of a repeat exam, a student may reject the topic only if he/she did not make use of the option to reject a topic when writing the first thesis.
- (2) An examination of a Master's thesis resulting in a pass cannot be repeated.
- (3) For any oral exam which may be required at the end of the Master's degree studies, oral exam on the contents of the Master's thesis and any final colloquium which may be required as part of the thesis process, the provisions set out respectively in 1(1) and (2) and in 2 apply accordingly.

## VII. Master's overall grade

## § 21 Calculation of the overall grade

- (1) If the Master's examination results in a pass, an overall grade is calculated; the relevant decimal grades are to serve as the basis of this calculation.
- (2) <sup>1</sup>The Master's overall grade is calculated according to the Special Provisions of these exam regulations. <sup>2</sup>For the Master's grade, §14 (2) and §14 (3)(2) apply accordingly, provided that no other provisions are set out in these exam regulations or in the Special Provisions of these exam regulations.

#### **VIII. Certificates**

## § 22 Certificate and other documentation

(1) <sup>1</sup>If the candidate has passed the Master's examination, he or she receives a certificate. <sup>2</sup>The certificate details the overall grade and the Master's thesis topic. <sup>3</sup>The certificate is signed by the Dean of the Faculty of Science and by the head of the board of examiners. <sup>4</sup>It bears the date of the day on which the last piece of assessment for the Master's examination was completed. <sup>5</sup>It is issued in German; an English translation will be issued upon application.

(2) <sup>1</sup>The University issues a diploma supplement (DS) in accordance with the Diploma Supplement Model of the European Union/ Council of Europe/ UNESCO; it describes the profile of the study program as well as as a transcript of records. Each of these is issued in German; an English translation will be issued upon application.

<sup>2</sup>The transcript of records includes the following:

- modules taken during the course of the Master's program as well as their components and ECTS credit points,
- the grades given in the modules,
- the grade given for the Master's examination and any oral exam required at the end of the Master's degree studies, any oral exam on the contents of the Master's thesis and/or any final colloquium required as part of the thesis process.

(3) <sup>1</sup>The overall grade is supplemented by a relative grade based on the European Credit Transfer and Accumulation System. <sup>2</sup>This can be done in particular by listing an ECTS grade according to the following scale

the best 10%	Α
the next 25%	В
the next 30%	С
the next 25%	D
the next 10%	Е
failed	F

in the certificate or in the transcript of records or insofar as the necessary data are available in accordance with the ECTS Users' Guide via an ECTS grading table (giving the statistical distribution of grades as percentages of the reference group) in the diploma supplement. <sup>3</sup>Details on the relative grade are set out by the examination board with regard to European guidelines.

#### § 23 Degree certificate

- (1) <sup>1</sup>The candidate recieves a Master's degree certificate at the same time as the certificate, including the date. <sup>2</sup>It certifies the awarding of the academic degree of Master according to § 2. <sup>3</sup>An English translation of the degree certificate will be issued upon application.
- (2) The Master's degree certificate is signed by the Dean of the Faculty of Science and by the head of the board of examiners and bears the seal of the University.
- (3) The academic title may only be used after the degree certificate has been issued.

#### § 24 Certification in the event of an overall fail

<sup>&</sup>lt;sup>3</sup>Grades are listed in the form of decimal numbers.

- (1) Students who have failed the Master's examination with no option to re-sit receive written certification from the examination board, including instructions on the right to appeal.
- (2) <sup>1</sup>If the student has failed the Master's examination with no option to re-sit, he or she may apply to be issued with certification signed by the head of the examination board, listing the assessed and non-assessed coursework completed and showing that the Master's examination overall was failed with no option to re-sit. <sup>2</sup>This still applies when the candidate's right to be examined has expired.

## IX. Closing remarks

## § 25 Absence, withdrawal, deception, breach of regulations

- (1) <sup>1</sup>A piece of assessed work counts as graded "insufficent" if the candidate fails to attend an exam without good reason and without having deregistered him/herself fom the exam in the form set out by the examination board and within the period prescribed, or if he/she for no good reason withdraws from the exam after it begins. <sup>2</sup>The same applies if a written or practical piece of assessment is not submitted within the allotted time period. <sup>3</sup>Deregistration from a written or practical piece of assessment or from the Master's thesis without providing reasons is possible on working days Monday to Friday up until three days before the first day of the examination. <sup>4</sup>In the case of oral exams, deregistration must take place at the latest five working days (not counting Saturdays) before the day of the relevant examination.
- (2) <sup>1</sup>The reasons given for withdrawing or failing to attend must be communicated in writing and at the earliest possible opportunity to the examination board. They must be credible. <sup>2</sup>In the case of illness of the candidate or of a child in his/her care a doctor's certificate may be required; in particular cases of doubt, certification by a public health officer may be required. <sup>3</sup>If the reasons are recognized, a new date for the exam will be set. <sup>4</sup>In such a case, the existing exam results must be accredited.
- (3) <sup>1</sup>If the candidate attempts to influence the result of his/her assessed work using deception or resources which are not permitted, the relevant work will be given a grade of "insufficient" (5.0). <sup>2</sup>A candidate who disrupts the regular proceedings of an exam may be excluded from continuing the exam by the examiner or invigilator; in this case the candidate's assessment for that exam will be given a grade of "insufficient" (5.0). <sup>3</sup>In severe cases of 1 and 2, the examination board may exclude the candidate from carrying out further assessment.
- (4) <sup>1</sup>The examination board decides on the recognition of reasons for absence or withdrawal. <sup>2</sup>Within a time limit of one month, the candidate can request that decisions under (3) be reviewed by the examination board.

## § 26 Protection provisions

- (1) <sup>1</sup>The opportunity to claim statutory time off under the Maternity Protection Act as well as time off for parenting leave in accordance with the relevant law on parental benefits and on parenting leave (Bundeselterngeld- und Elternzeitgesetz BEEG) is guaranteed. <sup>2</sup>The examination board decides on whether to extend such time off periods and for how long upon application. <sup>3</sup>The opportunity to meet family obligations under § 32 (1)(2) LHG is guaranteed; the examination board decides on whether to extend such time off periods and for how long, upon application.
- (2) ¹Students who are unable to attend classes regularly or are unable to carry out expected assessed and non-assessed coursework or any other work due to lingering illness or due to lingering or permanent disability without being unable to study may apply to the examination board to complete their Master's examination within a reasonable period after the planned time limit under these exam regulations. ²The student must stipulate the length of time by which he/she seeks to extend the deadline; the examination board decides on the length of the extension. ³The application must be accompanied by relevant documentation, medical certificates in particular. ⁴In in particular cases of doubt, the University may require certification by a public health officer. ⁵The student is obliged to make notification of changes in the prerequisites for extension at the earliest possible opportunity. ⁶The examination board must check to see whether the changes in the prerequisites for extension mentioned above exist in fact and, if they do, the board must notify the student at the earliest possible opportunity of the new time limits.
- (3) Activities as an elected member of statutory bodies or organs of the University or of student services (Studentenwerk) during at least one year does not have to be taken into account in the calculation of exam time limits; the decision rests with the University President.

## § 27 Invalidity of an examination or assessed coursework

- (1) <sup>1</sup>If the candidate has used deception in a piece of assessed work, the grade for that assessed work may be corrected even if the deception becomes known after the certificate has been issued. <sup>2</sup>In such cases the exam and the assessed coursework can be declared "insufficient" and the Master's examination a fail, as applicable.
- (2) <sup>1</sup>If the requirements for admission to an exam or piece of assessed coursework were not met, and the candidate did not intend to deceive, and if the fact becomes known only after the certificate has been issued, this fault is remedied by the candidate having passed the exam or piece of assessed coursework. <sup>2</sup>If the candidate deliberately obtained admission

wrongfully, the pieces of assessment to which the deception applies may be declared "insufficient" and the grades for them corrected accordingly. For pieces of assessment made up of several components, the overall grades may be corrected accordingly and if appropriate in such cases declared "insufficient" - and the Master's examination declared a fail if appropriate.

- (3) <sup>1</sup>The candidate must be given a chance to speak on the matter prior to the decision. <sup>2</sup>The option of withdrawing the Master's degree under statutory provisions remains unaffected by (1) and (2).
- (4) <sup>1</sup>The incorrect certificate as well as any incorrect transcript of records must be confiscated and a new one issued, where applicable. <sup>2</sup>Along with the incorrect certificate, the Master's degree is to be confiscated if the exam or piece of assessment has been declared a fail due to deception under (1) or (2)(2). <sup>3</sup>There can be no decision under (1) and (2)(2) after a period of five years starting on the date of the certificate.
- (5) The sections 1-4 apply accordingly to non-assessed coursework and any other additional work.

## § 28 Inspection of examination files

- (1) For one year following the conclusion of the Master's examination process, graduates are guaranteed the right to inspect their Master's thesis and the examiner's reports relating to it as well as the minutes of any oral exam required at the end of their Master's degree studies, oral exam on the contents of the Master's thesis and/or any final colloquium required as part of the thesis process.
- (2) <sup>1</sup>For the inspection of course-related written assessed work and/or of the minutes of course-related oral exams there is usually a time limit of four weeks after notification of the exam results. <sup>2</sup>Additionally, general times for inspecting certain pieces of assessed work may be offered.
- (3) <sup>1</sup>The relevant applications must be made in writing to the head of the examination board. <sup>2</sup>The board of examiners determines the time and date of the inspection.

### § 29 Effective date

<sup>1</sup>These exam regulations come into effect on the date of their publication in the University of Tübingen's official bulletin, the Amtliche Bekanntmachungen. <sup>2</sup>Their first semester of validity is the winter semester 2017/2018.

Professor Dr. Bernd Engler
President and Vice-Chancellor

University of Tübingen exam regulations for the study program in Mathematical Physics culminating in an examination for a Master of Science (M.Sc.) degree – Special Provisions –

In accordance with §§ 19 (1)(2)(7, 9), 32 (3) LGH as amended, the University of Tübingen Senate on 09.02.2017 passed the Special Provisions of these exam regulations for the study program in Mathematical Physics at the University of Tübingen culminating in an examination for a Master of Science (M.Sc.) degree.

Approved by the President and Vice-Chancellor on 30.03.2017.

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### **Special Provisions**

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## § 1 Validity of General Provisions

The University of Tübingen exam regulations for the Mathematical Physics degree program culminating in the academic degree of Master of Science (M.Sc.) – General Provisions – as amended are part of these exam regulations, insofar as no other special provisions have been made.

## I. Goals, contents and structure of the program

# § 2 Contents and goals, prescribed minimum period for completion, volume, and start date of program

- (1) ¹The Mathematical Physics Master's program culminating in an examination for a Master of Science (M.Sc.) degree (hereinafter: the Master's program) is a research-oriented program following on from the six-semester Bachelor's degree in Mathematics at the University of Tübingen. ²The Master's program allows students to obtain long-term academic qualifications aimed at obtaining and increasing knowledge in a systematic and critical way, and justifying a general scientifically-based occupational qualification for students in the field of Mathematical Physics; building upon a first degree in the field. ³The Mathematical Physics program builds upon the basics and the methodological knowledge obtained during the relevant Bachelor's degree, teaching advanced skills in the areas of mathematical structure of physical theories and mathematical modelling and mathematical analysis of physical problems. ⁴Students in the Master's program are required to learn how to adequately model, structure, and analyze physical problems mathematically. ⁵The goals to be met are set out in the module handbook.
- (2) <sup>1</sup>The regular duration of study in the Master's program is set out in § 1 (5) of the General Provisions of these exam regulations. <sup>2</sup>A total of 120 credit points must be obtained to successfully complete this Master's degree program. <sup>3</sup>The start of the program (winter or summer semester) is set out in the regulations governing admission and enrollment at the University of Tübingen, as amended.
- (3) <sup>1</sup>A prerequisite for enrollment in this Master's program is a Bachelor's degree in the subjects of Mathematics or Physics or an equivalent degree with a grade of 2.5 or better, respectively. <sup>2</sup>The board of examiners will decide on the equivalency of a degree and on whether the prerequisite in (<sup>1</sup>) above has been met. <sup>3</sup>The board may transfer this decision revocably to the head of the board. <sup>4</sup>If there is a set number for admission, the statutes may specify that the selection committee formed for the relevant selection process decides instead.
- (4) <sup>1</sup>To take part in the Master's program, you must also document that your knowledge of English is at least at the level of B2 of the Common European Framework of Reference for Languages (CEFR). <sup>2</sup>For the requirement in (<sup>1</sup>) above, paragraph (3)(<sup>2-4</sup>) applies accordingly.

## § 3 Structure

(1) <sup>1</sup>The Master's program is structured over two years. <sup>2</sup>It concludes with the Master's examination.

(2) <sup>1</sup>Students complete a program of 120 credit points. The program consists of the following modules:

Study	recommended	Modul	Module description	Class type	ECTS
area	semester	e code		(subject to	credits
	(subject to availability			change, see	
	and change,			module	
	see mod. handbook)			handbook)	
Study area: Basics of Mathematical Physics	1	G1	Geometry in Physics	see module	9
				handbook	
	1	G2	Mathematical Quantum	see module	9
			Theory *	handbook	
	2	G3	Mathematical Relativity *	see module	9
		63		handbook	
	2	G4	Mathematical Statistical	see module	9
<u></u>			Physics *	handbook	
Study area: Further	1/2/3	E1	Advanced Topics in	see module	9
			Mathematics	handbook	
S			Advanced Topics in	see module	_
0	1/2/3	E2	Theoretical Physics	handbook	9
Study area: Required	2/3	E3	Seminar	see module	3
				handbook	
.:. 자					
tudy area Required					
nbe	2 - 3	Required elective modules **		see module	total of
Stu		-		handbook	30
	3	SP	Scientific Project	see module	9
Study area: Academic writing				handbook	
ade					
rrea: Ac writing	3 - 4	MC	Mathematical Physics	see module	3
ırea writ			Colloquium	handbook	
a A	4 MT Master's thesis (Master			r's thesis and, if	30
Stu			provided for in the module handbook or exam regulations, possibly further classes or assessment)		

- \* Of the three modules G2 (Mathematical Quantum Theory), G3 (Mathematical Relativity) and G4 (Mathematical Statistical Physics) the student must complete either both G2 and G3 or both G3 and G4 or both G2 and G4.
- \*\* In the Required Elective study area, modules carrying a total of 30 ECTS credit points must be completed. The module handbook sets out which modules may be selected in the Required Electives study area.
- (3) If such elective options exist, students must make use of them so that the required number of credit points is reached in each module or study area (Study areas: Basics of Mathematical Physics; Further Knowledge; Required Electives; Academic Writing), unless the head of the board of examiners approves a differing points schedule.
- (4) <sup>1</sup>The modules and classes taken in the Required Electives and Further Knowledge study areas must be selected by the student (giving details of the study program the respective module belongs to) at the latest by the start of the lecture period in the fourth semester via a written declaration to the head of the examination board; such an application must be approved by the head of the examination board. <sup>2</sup>This selection is binding upon approval by the head of the examination board; any changes the student seeks thereafter must be applied for and they must be approved (the student does not however have any right to have any such changes approved) by the head of the examination board.
- (5) <sup>1</sup>Failed attempts in a class will be counted even if that class is taken again as part of another module or in another study area. <sup>2</sup>Classes which a student has already successfully completed may not be taken again as part of another module, or in another study area.
- (6) ¹It is prohibited for students to take, as part of their Master's studies, any module or class which is the same as, or substantially similar to, one they took in their Bachelor's studies; such modules and/or classes may therefore not be selected as part of Master's program studies under these exam regulations, nor be completed under § 3(2-4). ²In borderline cases and particularly cases in which the content of the modules/ classes overlaps to a large degree, the examination board is to decide on whether the module/ class may be selected/ completed as part of the program. ³The examination board may in individual cases define another appropriate module or class to replace a module or class which is excluded, if otherwise on the basis of these exam regulations and the module handbook there would not be a module yielding the necessary credits for an individual student to complete the program.
- (7) The provisions in the module handbook for any module of the "Required Electives" study area may also be valid for that module when it is also used as part of another degree program; likewise, the Mathematical Physics degree program's module handbook may refer

to the module handbook of another degree program for the provisions governing shared modules.

# II. Teaching of material

## § 4 Types of classes within the modules

<sup>1</sup>Classes of the following types in particular are scheduled regularly:

- 1. Lectures
- 2. Seminars
- 3. Colloquiums, practical work

<sup>2</sup>For classes which are wholly or largely made up of elements of the types listed in (1)(2-3) above, participant numbers may be limited under § 30(5)(1) LHG if training could not otherwise be guaranteed in accordance with the regulations or if a limitation is necessary for other reasons of research, teaching or patient care. <sup>3</sup>Subject-related techniques in particular are to be taught in these classes along with interdisciplinary, professionally-oriented qualifications. <sup>4</sup>In addition, students are to have the opportunity to work in small groups to develop the ability to present the knowledge obtained both verbally and in written form. <sup>5</sup>In addition, within the framework of § 30 (5)(1) LHG the right to participate in classes may be restricted or admission to part of the course may be made dependent on the completion of certain coursework, if training could not otherwise be guaranteed in accordance with the regulations or a limitation is necessary for other reasons of research, teaching or patient care.

#### § 5 Languages of instruction and examination

¹German and English are the languages of instruction and examination in this degree program. ²Classes and exams may take place in German or English; students are required to be sufficiently competent in German and English. ³In classes aimed at teaching a language other than German, the teaching and exams may be conducted in the relevant other language. ⁴The degree may also be obtained by completing the parts of the program offered in English; it is possible to gain enough credit points in the program's English-language classes to complete the degree, with all compulsory classes held in English and in these mandatory and other classes the coursework may be assessed in English.

# § 6 Types of assessment

The assessed coursework required in each of the modules is set out in the module handbook.

## III. Organization of program

## § 7 Volume of material

The required volume of study is set out in the General Provisions of the exam regulations, the structure of the program and the modules - particularly in § 3 of the Special Provisions of the exam regulations and in the module handbook.

## IV. Master's examination and overall grade

#### § 8 Nature and execution of Master's examination

In addition to the prerequisites set out in the General Provisions of these exam regulations, prerequisites for admission to the Master's thesis process and other possible oral examinations to be completed in the final phase of the program under § 15 of the General Provisions are:

- the successful completion of the 3 required modules in the study area Basics of Mathematical Physics according to § 3(2), and
- the successful completion of modules worth a total of at least 18 ECTS credits from the study areas Further Knowledge and Required Electives (cf. overview in § 3), and
- the successful completion of the Scientific Project module (cf. overview in § 3).

## § 9 Master's thesis

Provisions governing the Master's thesis are set out in § 17 of the General Provisions of these exam regulations.

## § 10 Calculation of the overall grade

The overall grade of the Master's examination is calculated on 33% of the grade for the Master's thesis module (Master's thesis and any further work required for this module according to the table set out under § 3) and 67% of the average (as weighted by credit points) of the grades of the other graded modules, taking account of the further provisions in § 21 of the General Provisions of these exam regulations.

V. Closing remarks

§ 11 Effective date

<sup>1</sup>These exam regulations come into effect on the date of their publication in the University of Tübingen's official bulletin, the Amtliche Bekanntmachungen. <sup>2</sup>Their first semester of validity is the winter semester 2017/2018.

Tübingen, 30.03.2017

Professor Dr. Bernd Engler
President and Vice-Chancellor