



# Grattis till din examen!

## VÄLKOMMEN SOM ALUMN

Du har tagit en examen och är nu alumn vid Lunds universitet. Ordet alumn kommer av latinets "alumnus", som betyder lärjunge eller skyddsling.

Som alumn är du en av Lunds universitets viktigaste ambassadörer och vi vill gärna behålla kontakten med dig efter studierna.

### Registrera dig som alumn och få tillgång till:

- information om vad som är på gång inom universitetets verksamhet
- inbjudningar till alumnträffar och andra evenemang
- alumnnätverket, vilket ger dig möjlighet att hålla kontakten med dina kursare och bredda ditt sociala och professionella nätverk

Välkommen att registrera dig på: [www.lu.se/alumni](http://www.lu.se/alumni)

Per Eriksson, rektor  
Lunds universitet



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LUNDS UNIVERSITET

**Xiaolei Xie**

830109-5496

HAR VID LUNDS UNIVERSITET AVLAGT

Naturvetenskaplig masterexamen

HUVUDOMRÅDE: FYSIK

*HAS BY LUND UNIVERSITY BEEN AWARDED THE DEGREE OF*

*Master of Science (120 credits)*

*MAJOR: PHYSICS*

UTBILDNINGEN SLUTFÖRDES DEN 26 JUNI 2014

*EDUCATION COMPLETED 26 JUNE 2014*

LUND, 11 NOVEMBER 2014  
*LUND, 11 NOVEMBER 2014*

OLOV STERNER

DEKANUS FÖR NATURVETENSKAPLIGA FAKULTETEN

*DEAN, FACULTY OF SCIENCE*





**LUNDS**  
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**NATURVETENSKAPLIG  
MASTEREXAMEN**

Examen på avancerad nivå omfattande  
120 högskolepoäng  
Huvudområde: Fysik

**DEGREE OF MASTER OF SCIENCE (120  
CREDITS)**

*A Second Cycle Degree comprised of 120 Credits  
Major: Physics*

Namn  
*Name*

Xiaolei Xie

Personnummer

*Personal identity number*

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Kurskod <i>Code</i>	Kursbenämning <i>Course</i>	Högskolepoäng <i>Credits</i>	Betyg <i>Grade</i>	Betygsdatum <i>Date</i>
FYSC13	Fysik: Fasta tillståndets fysik <i>Physics: Solid State Physics</i>	07.5	Väl godkänd <i>Pass with Distinction</i>	2012-01-12
FYSN17	Fysik: Kvantmekanik <i>Physics: Quantum Mechanics</i>	07.5	Väl godkänd <i>Pass with Distinction</i>	2012-03-07
FYST37	Fysik: Avancerad kvantmekanik <i>Physics: Advanced Quantum Mechanics</i>	07.5	Väl godkänd <i>Pass with Distinction</i>	2012-06-28
FYTN02	Teoretisk Fysik: Statistisk mekanik <i>Theoretical Physics: Statistical Mechanics</i>	07.5	Väl godkänd <i>Pass with Distinction</i>	2013-01-17
FYTN10	Teoretisk fysik: Introduktion till kvantfältteori <i>Theoretical Physics: Introduction to Quantum Field Theory</i>	07.5	Godkänd <i>Pass</i>	2013-04-04
FYST17	Fysik: Modern experimentell partikelfysik <i>Physics: Modern Experimental Particle Physics</i>	07.5	Väl godkänd <i>Pass with Distinction</i>	2013-04-08
FYST26	Fysik: Komplex ekonomi <i>Physics: Complex Economy</i>	07.5	Väl godkänd <i>Pass with Distinction</i>	2013-05-22
FYTN01	Teoretisk Fysik: Fysikens matematiska metoder <i>Theoretical Physics: Mathematical Methods of Physics</i>	07.5	Väl godkänd <i>Pass with Distinction</i>	2013-06-03
FYSM60	Fysik: Examensarbete - masterexamen III <i>Physics: Master's Degree Project III</i>	60	Väl godkänd <i>Pass with Distinction</i>	2014-06-26

**Examensarbete/Degree Thesis**

Return Models and Covariance Matrices

Originalhandling är försedd med universitetets reliefstämpel. För verifiering av detta dokument kontakta examensavdelningen vid Lunds universitet, Box 117, 221 00 Lund. E-post: [examen@stu.lu.se](mailto:examen@stu.lu.se), Telefon: 046-222 00 00, Fax 046-222 04 95

*The original document is provided with the raised seal of the University. To verify this document, please contact the Degree Office, Lund University, Box 117, SE-221 00 Lund, Sweden. E-mail: [examen@stu.lu.se](mailto:examen@stu.lu.se), Phone +46 46-222 00 00, Fax +46 46-222 04 95*



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NATURVETENSKAPLIG  
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60 högskolepoäng motsvarar ett års heltidsstudier. Före den 1 juli 2007 användes ett poängsystem där 1 poäng motsvarade en veckas heltidsstudier. Kurser som påbörjades före den 1 juli 2007 har fått dessa poäng konverterade till högskolepoäng genom att multipliceras med 1,5.

*60 credits equal one year of full-time studies. Before 1 July 2007, a credit system was used where 1 credit point was equivalent to one week of full-time studies. For courses attended before 1 July 2007, the credit points have been converted to credits according to the new system by multiplying by a factor of 1.5.*

Betygsskala om ej annat anges: Godkänd, Väl godkänd.  
*Marking scale unless otherwise stated: Pass, Pass with Distinction.*

Lund den 11 november 2014  
*Lund 11 November 2014*

På universitetets vägnar  
*On behalf of the Registrar*



Imke Thormählen  
Examenshandläggare  
*Degree Officer*

Denna examen har utfärdats med stöd av högskoleförordningen (SFS 1993:100). För ytterligare information se bifogat Diploma Supplement.

*This degree has been issued in accordance with the Higher Education Ordinance (SFS 1993:100). For further information, see attached Diploma Supplement.*

Dnr STU2007/189



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## DIPLOMA SUPPLEMENT

This Diploma Supplement follows the model developed by the European Commission, Council of Europe and UNESCO/CEPES. The purpose of the supplement is to provide sufficient independent data to improve the international "transparency" and fair academic and professional recognition of qualifications (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It should be free from any value judgements, equivalence statements or suggestions about recognition. Information in all eight sections should be provided. Where information is not provided, an explanation should give the reason why.

### 1. INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

- 1.1 Family name(s): Xie
- 1.2 Given name(s): Xiaolei
- 1.3 Date of birth (day/month/year): 9 January 1983
- 1.4 Student identification number or code (if available): 830109-5496

### 2. INFORMATION IDENTIFYING THE QUALIFICATION

- 2.1 Name of qualification and (if applicable) title conferred (in Swedish):  
Naturvetenskaplig masterexamen
- 2.2 Main field(s) of study for the qualification: Physics
- 2.3 Name and status of awarding institution (in Swedish):  
LUNDS UNIVERSITET (State higher education institution with status of university)
- 2.4 Name and status of institution (if different from 2.3) administering  
studies (in Swedish): Not applicable
- 2.5 Language(s) of instruction/examination: English or Swedish

### 3. INFORMATION ON THE LEVEL OF THE QUALIFICATION

- 3.1 Level of qualification: Second cycle. For more information on higher education in Sweden, please see point 8, appendix 2.
- 3.2 Official length of programme: 120 credits. The extent of a course or study programme shall be denoted by credits, with full-time study during a normal academic year of 40 weeks corresponding to 60 credits. Ordinance (2006:1053).
- 3.3 Access requirement(s): A person meets the general entry requirements for courses or study programmes that lead to the award of a second-cycle qualification if he or she:  
possesses a first-cycle qualification comprising at least 180 credits or a corresponding qualification from abroad, or  
by virtue of courses and study programmes in Sweden or abroad, practical experience or some other circumstance has the aptitude to benefit from the course or study programme.  
An exemption may be made to the requirement of a qualification pursuant to item 1 in the first paragraph if an applicant is considered to meet the requirements for the award of such a qualification but no certificate has been issued due to special circumstances. Ordinance (2006:1053).





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#### **4. INFORMATION ON THE CONTENTS AND RESULTS GAINED**

**4.1 Mode of study:** Full-time equivalent.

**4.2 Programme requirements:**

##### **Scope**

A Degree of Master of Science (120 credits) is awarded after the student has completed the courses required to gain 120 credits with a defined specialisation determined by each higher education institution itself, of which at least 60 credits are for specialised study in the principal field (main field of study) of the study programme. In addition the prior award of a Bachelor's degree, Bachelor's degree in fine arts, professional or vocational qualification of at least 180 credits or a corresponding qualification from abroad is required. The requirement of the prior award of a qualification may be waived for a student admitted to the programme without the basic entry requirement in the form of a qualification. This does not, however, apply if a waiver was granted during admission pursuant to the second paragraph of Section 28 of the Chapter 7 of the Higher Education Ordinance (1993:100) on the grounds that the qualification had not yet been issued.

##### **Outcomes**

##### **Knowledge and understanding**

For a Degree of Master of Science (120 credits) the student shall have:

- demonstrated knowledge and understanding in the main field of study, including both broad knowledge of the field and a considerable degree of specialised knowledge in certain areas of the field as well as insight into current research and development work, and
- demonstrated specialised methodological knowledge in the main field of study.

##### **Competence and skills**

For a Degree of Master of Science (120 credits) the student shall have:

- demonstrated the ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information
- demonstrated the ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work
- demonstrated the ability in speech and writing both nationally and internationally to report clearly and discuss his or her conclusions and the knowledge and arguments on which they are based in dialogue with different audiences, and
- demonstrated the skills required for participation in research and development work or autonomous employment in some other qualified capacity.

##### **Judgement and approach**

For a Degree of Master of Science (120 credits) the student shall have:

- demonstrated the ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues and also to - demonstrate awareness of ethical aspects of research and development work
- demonstrated insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and
- demonstrated the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

##### **Independent project (degree project)**

A requirement for the award of a Degree of Master of Science (120 credits) is completion by the student of an independent project (degree project) for at least 30 credits in the main field of study. The degree project may comprise less than 30 credits, however no less than 15 credits, if the student has already completed an independent project in the second cycle for at least 15 credits in the main field of study or the equivalent from a programme of study outside Sweden.

##### **Miscellaneous**

Specific requirements determined by the each higher education institution itself within the parameters of the requirements laid down in this qualification descriptor shall also apply for a Degree of Master of Science (120 credits) with a defined specialisation.



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- 4.3 Programme details (e.g. modules or units studied), and the individual grades/marks/credits obtained (if this information is available on an official transcript this should be used here): See "Course Record"
- 4.4 Grading scheme and, if available, grade distribution guidance: Unless otherwise prescribed in the course syllabus, a grade is to be awarded on completion of a course. The grade is to be determined by a teacher specially appointed by the higher education institution (an examiner).
- 4.5 Overall classification of the qualification (in original language): Not applicable for Swedish qualifications.

## 5. INFORMATION ON THE FUNCTION OF THE QUALIFICATION

- 5.1 Access to further study: The degree gives access to studies at third level.
- 5.2 Professional status (if applicable): Not applicable for this degree.

## 6. ADDITIONAL INFORMATION

- 6.1 Additional information: -
- 6.2 Further information sources:

Degree Office  
Lund University  
Box 117  
SE-221 00 Lund  
SWEDEN  
+46 46 222 00 00  
Fax: +46 46 222 04 95  
<http://www.lu.se/examensavdelningen>

Swedish Council for Higher Education  
PO Box 45093  
SE-104 30 Stockholm, Sweden

ENIC/NARIC Sweden  
Evaluation Unit for Foreign Qualifications  
E-mail: [enic-naric.sverige@uhr.se](mailto:enic-naric.sverige@uhr.se)

<http://www.uhr.se/sv/Information-in-English>



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## 7. CERTIFICATION OF THE SUPPLEMENT

7.1 Date: 11 November 2014

7.2 Signature

A handwritten signature in blue ink, appearing to read 'Imke Thormählen', written over a horizontal line.

Imke Thormählen

7.3 Capacity: Degree Officer

7.4 Official stamp or seal



## 8. INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

See attached appendix *The Swedish Higher Education System*