



**The Chinese University of Hong Kong
Department of Physics**

Postgraduate Studies in

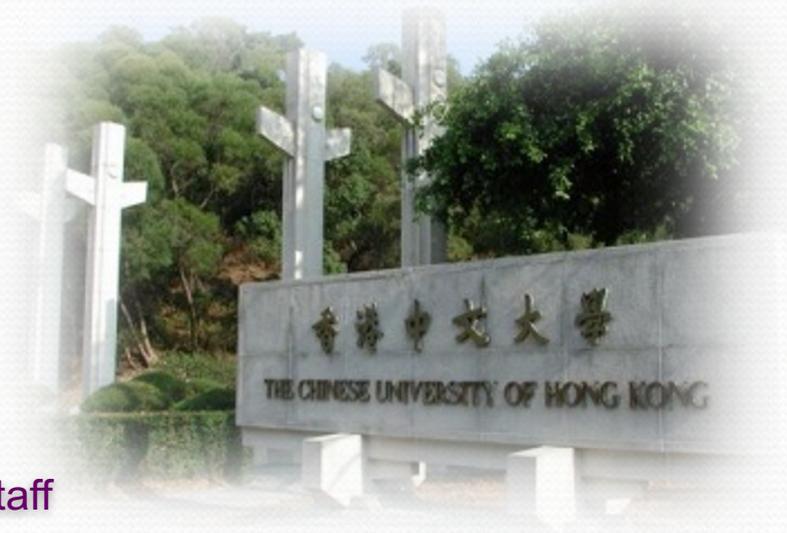
“Physics” and “Materials Science and Engineering” in Fall 2022

Department Profile (as of April 26, 2021)

- 9 Full Professors
- 10 Associate Professors
- 3 Assistant Professors
- 4 Research Assistant Professor
- 6 Lecturers/Senior Lecturers
- 10 Technical Staff
- 8 Administrative, Clerical and Supporting Staff

Postgraduate Programmes

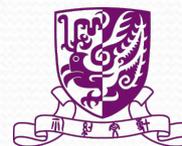
- MPhil/PhD in Physics (PHYS) [*with Financial Support*]
- MPhil/PhD in Materials Science and Engineering (MSEG) [*with Financial Support*]
- MSc in Physics [*no Financial Support*]



Statistics of PG Students (2020-21)

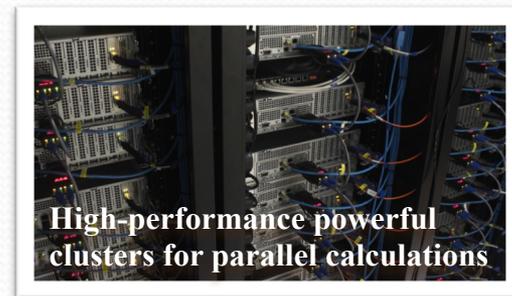
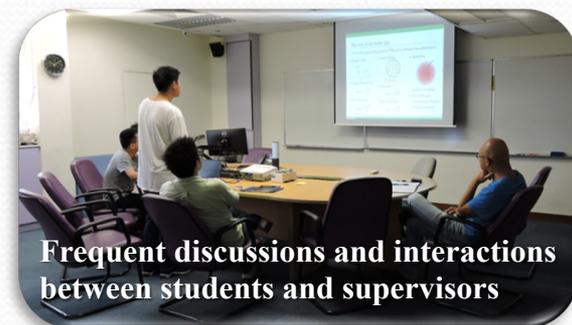
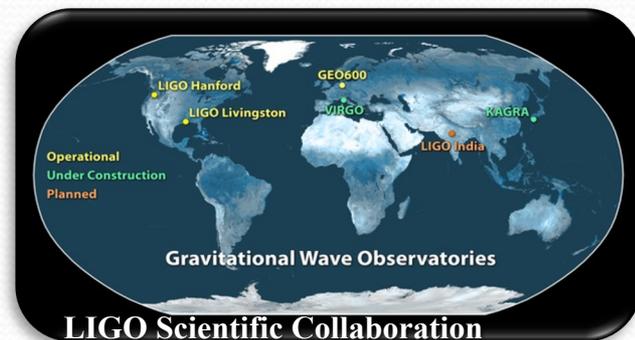


Division	Degree	Number of Students					
		Year 1	Year 2	Year 3	Year 4	Sub-total	Total
MSEG	MPhil	1	0	--	--	1	32
	PhD	7	9	11	4	31	
PHYS	MPhil	7	18	--	--	25	119
	PhD	17	17	14	10	58	
	MSc	28	8	--	--	36	



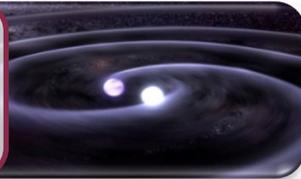
Features and Strengths

- Largest graduate student body in Physics+MSE in Hong Kong
- Intensive and diverse programme
- State-of-the-art research and participation in international collaborations (*CERN, LIGO, Daya Bay Neutrino project*)
- Close supervisor-student relationship in Collaborative mode
- Many of the students' works publishable in high impact journals (e.g. *Nature, Nature Physics, Nature Nano Technology, PRL, Advanced Materials, etc.*)
- Financial support for conference presentations
- Excellent facilities (experimental and computational)
- Employment opportunities ranging from academic, governmental, and private sector positions

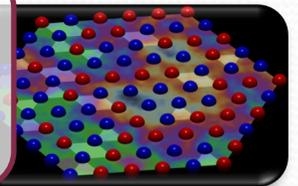


Research Areas

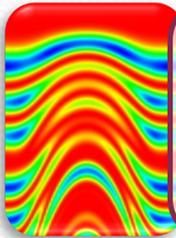
Particle Physics, Cosmology,
High Energy Physics,
Gravitational Waves,
Pulsars, Star Formation



Condensed Matter Physics, Electronic and
Optical Properties of Semiconductor
Nanostructures, Interacting Electron-
Phonon Systems, Strongly Correlated
Systems, Topological Matters

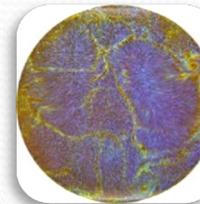


Ultracold Atoms and
Molecules, Quantum
Matters, Quantum Optics,
Quantum Sensing, Quantum
Information and Quantum
Physics



**Flexible scheme to
best match students
and supervisors'
research interests**

Complex Systems,
Turbulence, Quantitative
Finance



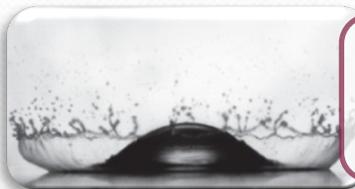
Surface Science and Nanostructures
on Surfaces, Synthesis and Property
of Metal and Semiconductor Nano-
structures, Plasmonics Properties of
Metal Nanostructures, Optical
Properties of Semiconductors, Non-
linear Optical Properties of Organic
Materials



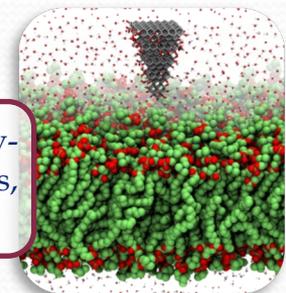
Fabrication and Characterization of
Biomorphic Materials, Ceramic-Metal
Matrix Compounds, Thin Film Growth
and Magnetic Oxides, Nanostructured
Metal Composites, Nano-Bio Interface
and Nanopatform for Theranostic
Applications, Energy Storage Materials



Bacterial Motion, Colloids,
Glass Formation, Liquid-
Solid Impact



Computational Physics, Many-
body Computational Physics,
Computational Biophysics



Destinations After Graduation

Higher Institution

Tenure track faculty and postdoctoral positions, research fellows, etc.

- US: Massachusetts Institute of Technology, Johns Hopkins University, University of Illinois at Urbana-Champaign, UC Santa Barbara, Boston College, Washington University, ...
- Europe: University of Ulm (Germany), University of Twente (Netherlands), University College London (UK), ...
- Asia: The Chinese University of Hong Kong, HKUST, Peking University, Tsinghua University, Fudan University, National University of Singapore, The University of Tokyo, National Taiwan University, ...

Commerce & Industry

Research scientists, engineers, consultants, analysts, etc.

- China: ASTRI, ClusterTech Limited, SAE Magnetics, Science Park (HK), Jinrui Futures, Bank of China, ...
- Asia: APEC Climate Center (Korea), ASM Pacific Technology Ltd. (Singapore), Sony Corporation (Japan), ...
- International: Bloomberg, Environmental Resources Management, Intel, KPMG Netherlands, EDG Inc. (US), iFire Co (Canada), ...

Government

Postdoctorals, Scientific officers, etc.

- Education Bureau (HK), Hong Kong Observatory, Department of Health (HK), Bureau of Meteorology (Australia), National Astronomical Observatory of China, National Institutes of Health (US), ...



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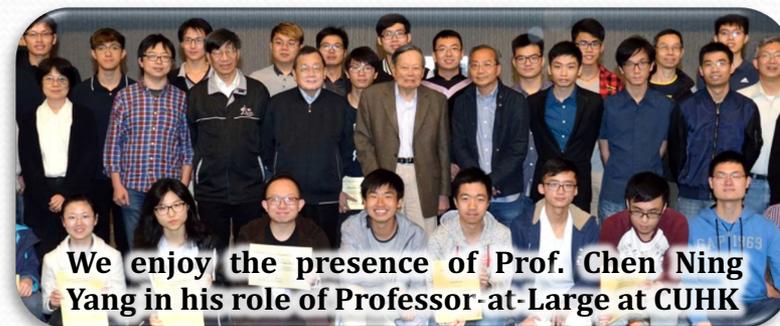
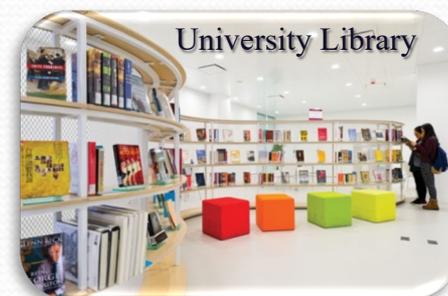
Computational Facilities

- 2 Computational Physics Laboratories
- Three High Performance Clusters
 - ❖ Cluster 1 : 45 nodes, 720 Intel Xeon cores, 1.63TB Memory, 60TB Storage
 - ❖ Cluster 2 : 44 nodes, 1056 Intel Xeon cores, 6.78TB Memory, 100TB Storage, Rpeak ~42.2TFlops
 - ❖ Cluster 3 : 18 nodes, 504 Intel Xeon cores, 3.84TB Memory, 18TB Storage
- 30 Intel Linux workstations, servers and many PCs
- Notebook computers, networked color laserjet printers, scanners, digital camera and photocopiers.
- Licensed Scientific Computing and Graphics Software
- CUHK Supercomputer:
 - ❖ CU Grid(Orion), 848 Intel Xeon cores, 302GB Memory, 6307.2 GFLOPS



Services and Facilities at CUHK

- ★ **University Library** ★ has one of Hong Kong's most comprehensive collections
- ★ **University Health Service** ★ provides primary medical care
- ★ **Sports Facilities** ★ include a sports field for track and field, gymnasiums, an Olympic-sized swimming pool, tennis and squash courts, weight-training rooms and a water-sports centre
- ★ **Independent Learning Centre** ★ provides students with an immersive language-learning environment to improve their Chinese and English proficiency
- ★ **Office of Student Affairs** ★ offers professional advice on personal growth and development
- ★ **Postgraduate Student Society** ★ organizes and promotes academic and recreational activities (e.g. student conference, movie night, hiking trip, etc.)



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Programme of Study

Degree	Normative Study Period		Course Work	Thesis Research
	Full-time	Part-time		
MPhil	24 months	N/A	12 units	6 units each term
PhD (student with a research master's degree)	36 months	N/A	12 units	6 units each term during pre-candidacy period and 12 units each term during post-candidacy period
PhD (student without a research master's degree)	48 months	N/A	12 units	6 units each term during pre-candidacy period and 12 units each term during post-candidacy period
MSc	12 months	24 months	24 units	No

- In the final year of study, MPhil-PhD student must submit a thesis to Division and pass an oral examination defending his/her thesis.
- PhD students must fulfill the candidacy requirement within 24 months from first entry to advance to PhD post-candidacy.



Programme of Study *(cont'd)*

Course List

- MSEG5020 Frontiers in Materials Science
- MSEG5040 Transmission Electron Microscopy
- MSEG5080 Surface Science
- PHYS5110 Fundamentals of Classical Mechanics and Special Relativity *(for MSc students only)*
- PHYS5120 Fundamentals of Modern Quantum Mechanics *(for MSc students only)*
- PHYS5130 Principles of Thermal and Statistical Physics *(for MSc students only)*
- PHYS5320 Photonics: Materials and Devices
- PHYS5330 Instrumentation I
- PHYS5350 Techniques in Materials Characterization
- PHYS5410 Quantum Mechanics II
- PHYS5420 Classical Electrodynamics
- PHYS5430 Solid State Theory
- PHYS5450 Introduction to Soft Matter Physics
- PHYS5460 Instrumentation II
- PHYS5510 Topics in Theoretical Physics (Advanced Statistical Mechanics)
- PHYS5520 Topics in Theoretical Physics (Introduction to Many-body Theory)
- PHYS5530 Topics in Theoretical Physics (Introduction to Particle Physics)
- PHYS5540 Topics in Theoretical Physics (Advanced Computational Physics)
- PHYS5550 Topics in Theoretical Physics (Quantum Optics)
- PHYS5560 Topics in the Frontiers of Physics
- PHYS5570 Methods in Theoretical Physics III
- PHYS5580 Physics of Quantum Information and Quantum Computation
- PHYS5590 Modern Atomic Physics
- PHYS5610 Introduction to Biophysics
- PHYS5620 Topics in Experimental Physics (Thin Film Physics and Technology)
- PHYS5660 Semiconductor Physics and Devices
- PHYS5710/5720/5730 Guided Study
- PHYS5990 Project III *(for MSc students only)*



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Fees, Studentship and Scholarships

Postgraduate studentship for MPhil-PhD students:	HKD18,025-18,525 per month (2020-21) or HKD26,600 per month* (HKPFS awardees) (2021-22)
Scholarship opportunities:	<ul style="list-style-type: none">• HKSAR Government Scholarship Fund• CN Yang Scholarship• Science Faculty Scholarships• Scholarships and prizes offered by the University
Annual tuition fee (2020-21): (Full-time MPhil-PhD)	<ul style="list-style-type: none">• Tuition waiver for local students• HKD42,100 for non-local students
Hostel fee:	HKD1,835-3,675 per month

★ Outstanding PhD applicants will be recommended to compete for Hong Kong PhD Fellowship Scheme (HKPFS) (<http://www.rgc.edu.hk/hkphd>). Awardees will be provided a monthly studentship of HK\$26,600 and a conference and research-related travel allowance of HK\$13,300 per year. The CUHK will offer tuition waiver to awardees.



Admissions Requirements

MPhil / PhD Programme

- Bachelor's or Master's degree in related disciplines (by the time of admission), with a good major GPA (typically 3.2 or above) OR a good honors degree (typically Second Class Upper Division or above)
- Good Recommendations
- [Optional] Score 800 or above in GRE Subject Test ("*Physics*", "*Chemistry*", "*Mathematics*" or "*Biology*")
- Acceptable to Supervisor
- Acceptable to Graduate School

MSc Programme

- Bachelor's degree in Science or Engineering (Second Class Honours or overall average result of B or above), or have sufficient preparation in Physics if the first degree is in other disciplines
- Acceptable to Graduate School



Admissions Requirements *(cont'd)*

English Language Proficiency Requirement

1. Obtained a degree from a university in Hong Kong or taken a degree programme of which the medium of instruction was English; OR
2. achieved scores in one of the following English Language tests as indicated:
 - TOEFL (Paper-based: 550; Computer-based: 213; Internet-based: 79)
 - IELTS (Academic) (Band 6.5)
 - GMAT (verbal) (Band 21); OR
3. obtained a pass grade in English in one of the following examinations:
 - Hong Kong Advanced Level Examination (AS Level)
 - CUHK Matriculation Examination
 - General Certificate of Education Examination (A-Level/AS-Level)
 - Level 4 or above in the English Language subject of the HKDSE; OR
4. obtained a recognized professional qualification, provided that the examination was conducted in English.



Application Periods

- **Early Application** [For MPhil and PhD applicants]: **26 April 2021 to 25 June 2021**
- *Regular Application:*
 - **September 2021 to 1 December 2021** [For HKPFS PhD applicants to submit initial application to RGC and full application to CUHK]
 - **September 2021 to 31 January 2022** [For MPhil and non-HKPFS PhD applicants]
 - **October 2021 to 30 April 2022** [For MSc applicants]

* Applicants applying to HKPFS should first submit initial application through the HKPFS application system and obtain a “Reference Number”. Applicants should then submit full application through CUHK’s application system and quote the “Reference Number”.



Early Application Procedures (MPhil and PhD Programmes)

- Application Deadline: **25 June 2021**
- Information and Project lists 2022-23:
 - Physics (PHYS): <http://www.phy.cuhk.edu.hk/admission/pgphy.html>
 - Materials Science & Engineering (MSEG):
<http://www.phy.cuhk.edu.hk/admission/pgmse.html>
- Completion of application form:
 - Download at: <http://www.phy.cuhk.edu.hk/admission/App2022-23.pdf>
 - Write down at most five (PHYS) or three (MSEG) project numbers in order of preference in the field "Field of study" under Part I of the application form.
 - Before making selections, potential applicants should contact the individual professors to find out more about their research, their group and what kind of students they are looking for.



Early Application Procedures (MPhil and PhD Programmes) (cont'd)

- Submit application form together with the following documents to our Division by email to pgadm@phy.cuhk.edu.hk (PHYS) or pgadm-mse@phy.cuhk.edu.hk (MSEG).
 - 1) copy of official transcript of academic records of all tertiary level studies and official explanatory notes indicating the grading scheme of the University;
 - 2) curriculum vitae;
 - 3) research/personal statement;
 - 4) copy of certificate of professional qualifications, prizes and awards (optional); and
 - 5) recommendation letter from two referees, to be sent directly by the referees by email to pgadm@phy.cuhk.edu.hk (PHYS) or pgadm-mse@phy.cuhk.edu.hk (MSEG).
- Shortlisted applicants will be invited to the Physics Summer Camp (Zoom-based) and the admission interview between 6-8 July 2021. Invitation will be sent to shortlisted applicants via email by 30 June 2021.
- Admission offer will be sent to successful applicants via e-mail by end of July 2021.
- Enquiries: pgadm@phy.cuhk.edu.hk (PHYS) or pgadm-mse@phy.cuhk.edu.hk (MSEG)



Regular Application Procedures (MPhil and PhD Programmes)

- Information and project lists 2022-23:
 - Physics (PHYS): <http://www.phy.cuhk.edu.hk/admission/pgphy.html>
 - Materials Science & Engineering (MSEG):
<http://www.phy.cuhk.edu.hk/admission/pgmse.html>
- Completion of application form on Internet:
 - HKPFS application system: <http://cerg1.ugc.edu.hk/hkpfs/apply.html>
 - CUHK's application system:
<https://www.gs.cuhk.edu.hk/admissions/admissions/how-to-apply>
 - Write down at most five (PHYS) or three (MSEG) project numbers in order of preference in the field "Field of study" under Part I of the application form.
 - Before making selections, potential applicants should contact the individual professors to find out more about their research, their group and what kind of students they are looking for.
- E-mail will be sent to applicants within 1 week after submission of application. Follow the instructions in the e-mail and submit required documents (e.g. official transcript, recommendations, CV, etc.) to our Division.



Regular Application Procedures (MPhil and PhD Programmes) (*cont'd*)

- Shortlisted applicants will be invited to the admission interview which will be held in early December 2021 (for PhD applicants applying to HKPFS) and early February 2022. Details will be sent to qualified applicants via e-mail in due course.
- Admission offer will be sent to successful applicants via e-mail by mid December 2021 (for PhD applicants applying to HKPFS) and end of February 2022.
- Enquiries: pgadm@phy.cuhk.edu.hk (PHYS) / pgadm-mse@phy.cuhk.edu.hk (MSEG)

Regular Application Procedures (MSc Programme in Physics)

- Completion of application form on Internet:
 - CUHK's application system:
<https://www.gs.cuhk.edu.hk/admissions/admissions/how-to-apply>
- E-mail will be sent to applicants within 1 week after submission of application. Follow the instructions in the e-mail and submit required documents (e.g. official transcript, recommendations, CV, etc.) to our Division.
- Admission offer will be sent to successful applicants via e-mail.

