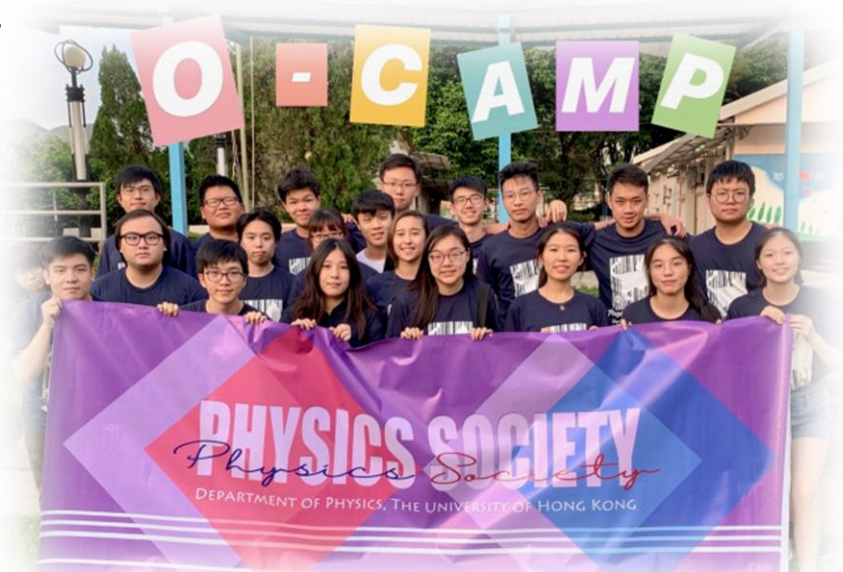




Major in Physics
Major in Physics (Intensive)

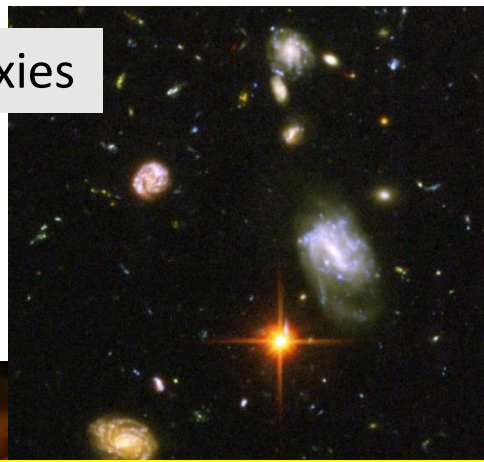
Minor in Physics
Minor in Astronomy

(Updated 29 Jun 2026)

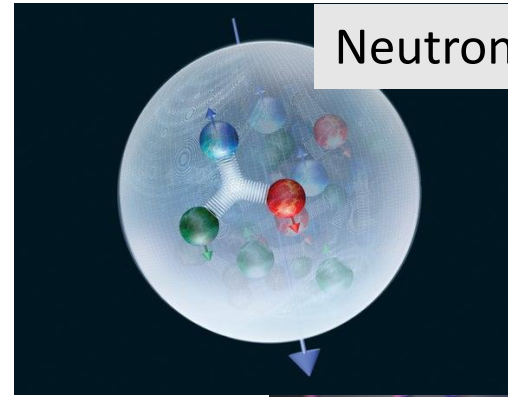




Galaxies



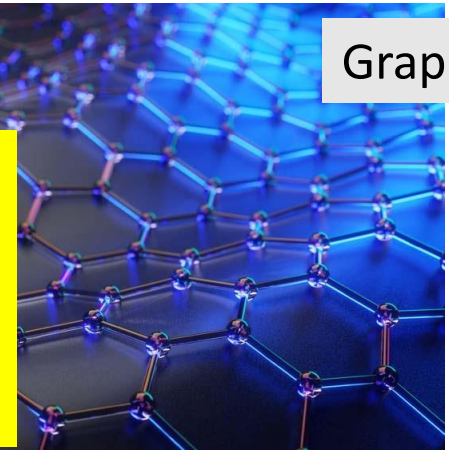
Neutrons



Sun-Earth system



Graphene



Why Physics?

A diverse universe around us, and we have many questions.

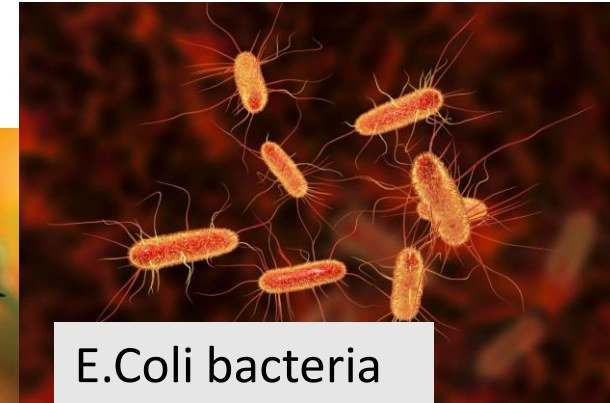
Ocean wave



Hummingbird



E.Coli bacteria





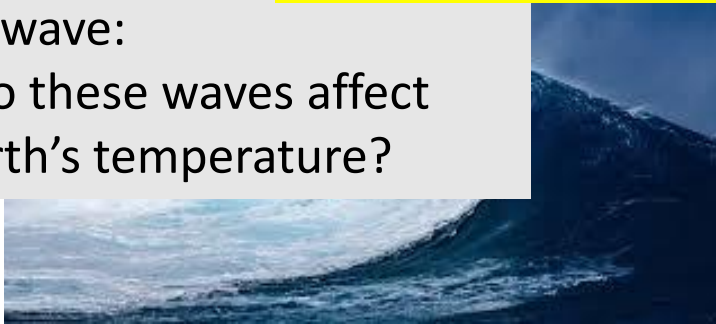
Galaxies:
What caused galaxies to
have different shapes?



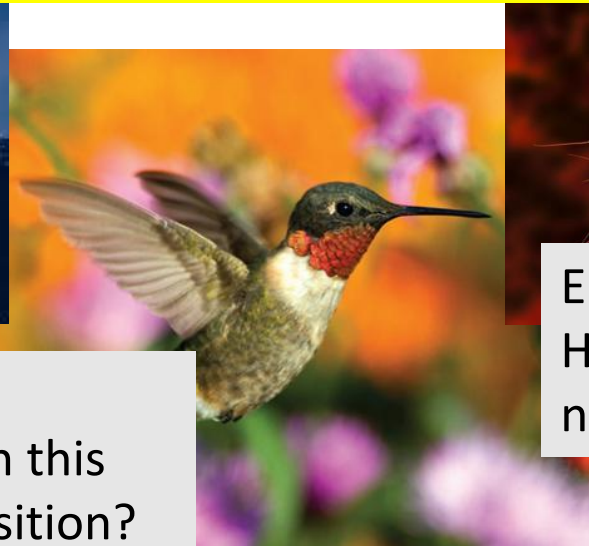
Sun-Earth system:
What's the best way to
extract solar energy?



Ocean wave:
How do these waves affect
the Earth's temperature?



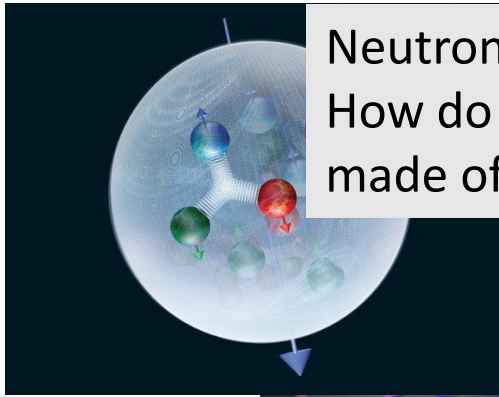
Hummingbird:
How can they maintain this
"suspension in air" position?



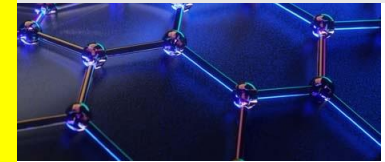
Why Physics?

**Physics is a powerful way to understand
the natural world, hence giving
solutions to human's challenges.**

Neutrons:
How do we know they are
made of three quarks?



Graphene:
Why does it have such
electric and mechanical
properties?

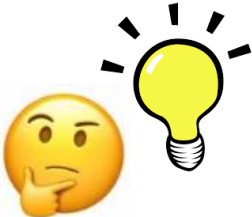


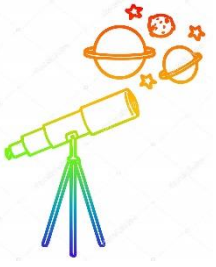
E.Coli bacteria:
How can these bacteria
navigate around?





Students gain a valuable skill set after a university physics training.

- Understanding the world (How things work?) 
- Quantitative thinking
- Discovering relationships
- Hands on experience with wide range of equipment
- Problem identification and solving 
- Designing research plans
- Communication skills (oral presentation, writing reports, ...)





We offer two physics-related Majors and two physics-related Minors.

- **Physics Major (96 credits; 16 courses)**
 - **Large flexibility** in curriculum, lead to diverse career paths
- **Physics Major (Intensive) (144 credits; 24 courses)**
 - **Comprehensive training** in physics, targeted for students who want to pursue Master or PhD in physics or other science/technical disciplines
- **Astronomy Minor (36 credits; 6 courses)**
 - Suitable for all students (BSc or non-BSc) interested in the subject
 - Minimum physics and mathematics background needed
- **Physics Minor (42 credits; 7 courses)**
 - Skills learnt in could be useful in many science and non-science fields (e.g., chemistry, economics and finance)



The Physics Major provides core training with maximum flexibility. (96 credits; 2 Sci core + 6 intro + 8 advance courses)

- **Aim:** Educating all-rounded physics students which best fit their interest and expertise
- Large flexibility in curriculum, lead to diverse career paths
- **Student-centered curriculum**
 - ❖ Learn the “**physics skill set**” first:
 - ✓ *Mathematics, problem-solving, model-building, computing*
 - ❖ Follow with **core courses** for physics undergraduates:
 - ✓ Introductory (Years 1 and 2): usage of calculus and vectors; stress daily connections
 - ✓ Advanced (Years 3 and 4): formal training in physics with more abstraction and advanced maths



The Physics Major (Intensive) prepares for research career in science/technology.

(144 credits; 2 Sci core + 10 intro + 12 advance courses)

- **Aim:** Educating physics students with a solid foundation on the subject in both breath and depth
- **Targeted for students who want to pursue further studies in physics and other science/technical disciplines**
- **Two majors: Physics & Physics (Intensive)** available for students
 - ❖ Can select **either** the regular Major or the Intensive option
 - ❖ **No penalty** for students who cannot complete the Intensive option
 - ❖ All required courses for the regular Major are included in the Intensive option

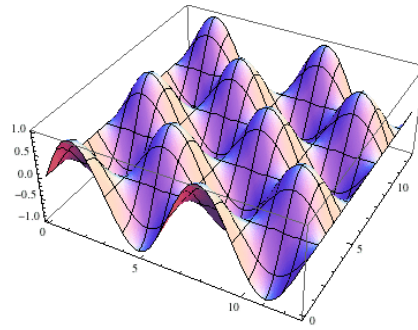


Four (*optional*) themes for Physics or Physics(Intensive) majors

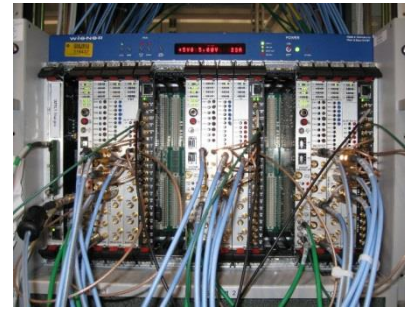
- **Optional** for students (may choose 0, 1 or 2 themes)



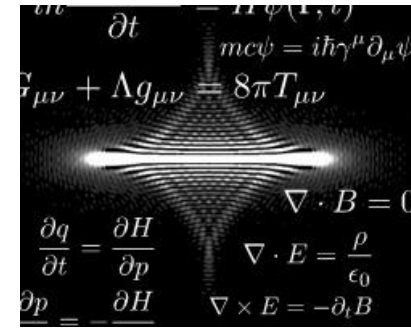
Astrophysics



**Computational
Physics**



**Experimental
Physics**



**Theoretical
Physics**

- Help students to **build expertise** in specific areas
- Capstone project related to the theme
- Enhanced training to prepare for postgraduate studies
- Student **strength endorsed** by the Department with certificate of completion



Capstone requirement: Integration and application of knowledge gained from the entire curriculum



1. **Physics Project (PHYS4999): 12 credits**
2. **Directed Studies in Physics (PHYS3999): 6 credits**
3. **Physics Department Summer Internship program (PHYS4966): 6 credits**

Requirement: 8 weeks in academic and non-academic institutions overseas or locally during summer

Local research: Spending summer to work with HKU professors

Overseas research: UC Berkeley, Caltech, Cambridge, Harvard, Oxford, Stanford, RIEKN, CERN, ...

Local organizations: HK Observatory, HK Space Museum, HK Science Museum, Ho Koon Nature Education cum Astronomical Centre, ...

Education: Cheung Sha Wan Catholic Secondary School, St Francis of Assisi College, Yu Chun Keung No 2 Memorial College, ...



Curriculum structure Physics Major Years 1 and 2

PHYS 1150 Problem Solving*
PHYS 2150 Method in Physics I*
PHYS 2155 Method in Physics II*
PHYS 2160 Intro Compu Physics*

PHYS 2055 Intro Relativity*
PHYS 2250 Intro Mechanics
PHYS 2261 Intro Thermal
PHYS 2255 Intro E&M
PHYS 2260 Intro Quantum

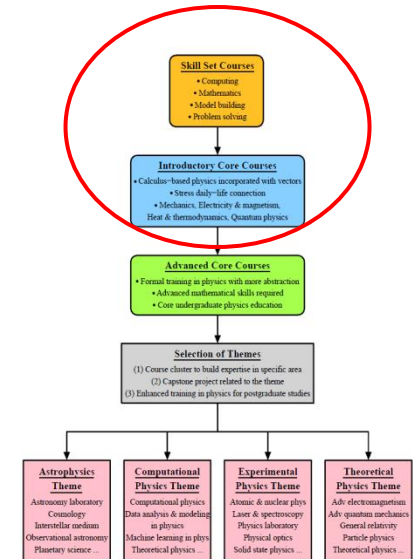
Required

Skill Set Courses

- Computing
- Mathematics
- Model building
- Problem solving

Introductory Core Courses

- Calculus-based physics incorporated with vectors
 - Stress daily-life connection
- Mechanics, Electricity & magnetism, Heat & thermodynamics, Quantum physics



* Select 2 out of 5



Curriculum structure Physics (Intensive) Major Years 1 and 2

PHYS 1150 Problem Solving
PHYS 2150 Method in Physics I
PHYS 2155 Method in Physics II

Skill Set Courses

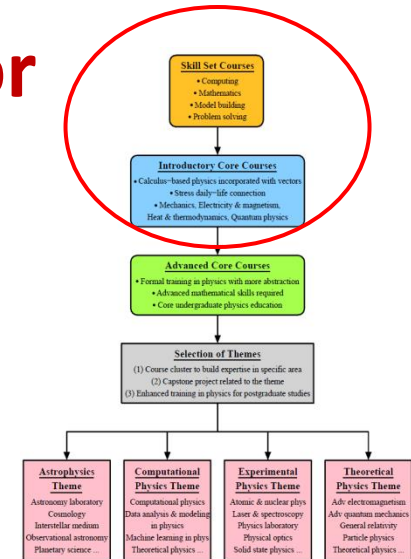
- Computing
- Mathematics
- Model building
- Problem solving

PHYS 2055 Intro Relativity
PHYS 2250 Intro Mechanics
PHYS 2261 Intro Thermal
PHYS 2255 Intro E&M
PHYS 2260 Intro Quantum

Introductory Core Courses

- Calculus-based physics incorporated with vectors
 - Stress daily-life connection
- Mechanics, Electricity & magnetism, Heat & thermodynamics, Quantum physics

Required

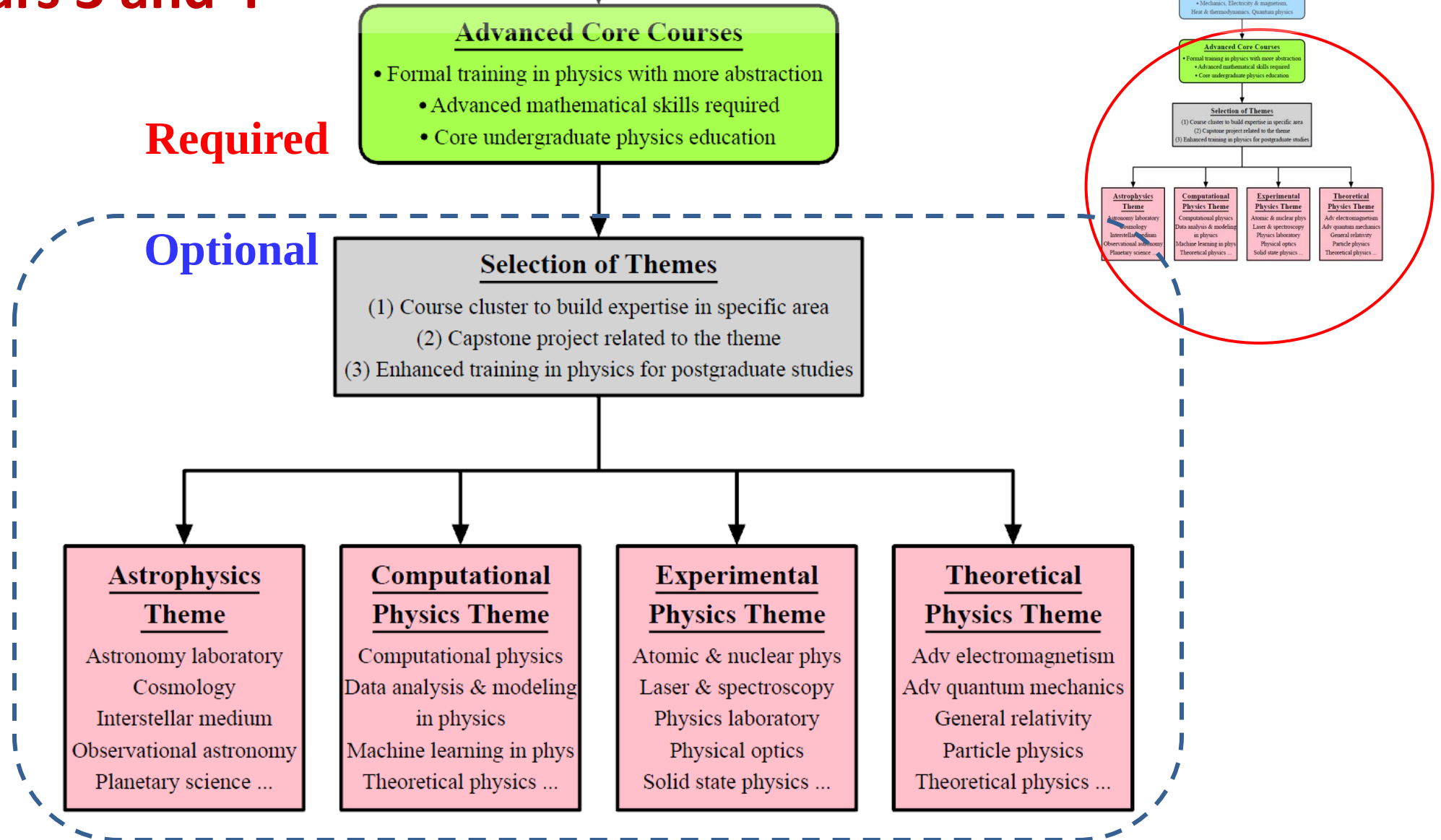


* Select 2 out of 6

COMP 1117 Computer Programming
MATH 1013 University Mathematics II
PHYS 1650 Nature of the Universe
PHYS 2160 Intro Computational Physics
PHYS 2650 Modern Astronomy
SDST 1600 Statistics: Data & Concepts



Curriculum structure Physics or Physics (Intensive) Major Years 3 and 4





The two physics-related Minors provides a flavor of the discipline.

- **Minor in Astronomy**

- Training on both observational and theoretical aspects, with **minimum physics and mathematics requirements**
- Suitable for both physics and non-physics major students
- Advanced courses in astrophysics continue to be offered to both undergraduate and postgraduate students.
- HKU continues to actively pursue **astronomical research** and **recruit postgraduate students** in astronomy.

- **Minor in Physics**

- Fundamental outlook on physics, with flexibility to explore one's interest
- Helpful for study of other science or non-science disciplines



There are multiple ways to focus on studying astronomy in HKU.



- If I want to study astronomy, should I select the
Minor in Astronomy?
Major in Physics (Intensive) with Astrophysics theme?
Major in Physics - Minor in Astronomy combination?
 - The Minor in Astronomy is suitable for science or non-science students with *minimal physics and mathematics requirements*.
 - If you want to pursue postgraduate research in astronomy, then EITHER Major in Physics (Intensive) with Astrophysics theme OR Major in Physics - Minor in Astronomy combination are good



Why choose to study physics @ HKU?



- Faculty with diverse research interest

Broad range of courses taught by expert staff on that topic; Outside experts invited to offer specialty courses

- Outstanding track record on research

Many channels for students to get involved, e.g. research project courses, Summer Research Fellowship

- A friendly learning environment

Small class size; *Low student-to-teacher ratio (lower than 6:1)*

- Long standing tradition of rigorous physics training

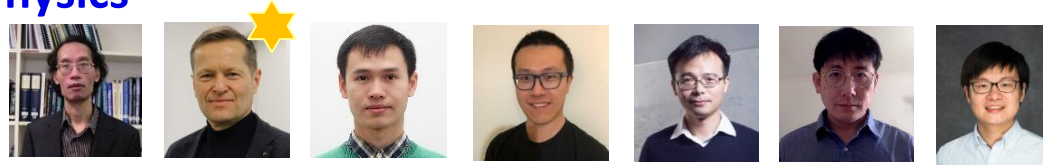
Alumni network in business, education, government and academia



We have leading experts in a focused range of research areas.

➤ Primary Research Areas of professoriate staff:

Atomic, Optical and Quantum Physics



Astronomy and Astrophysics



Experimental Condensed Matter and Material Science



Theoretical and Computational Condensed Matter Physics



Experimental Nuclear and Particle Physics



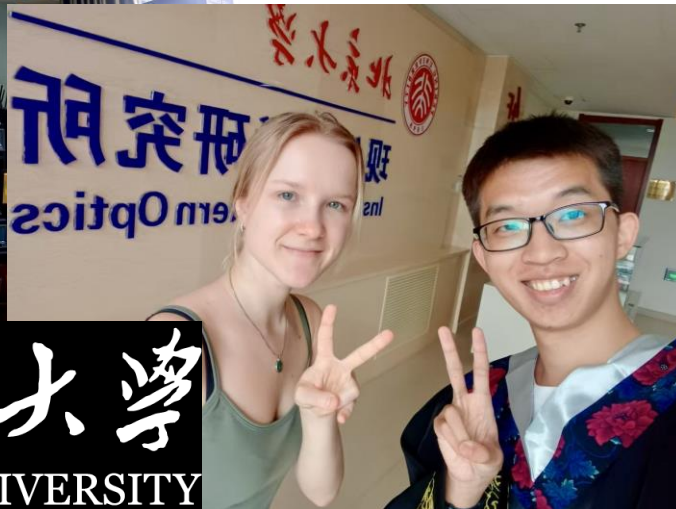
★ Nobel Laureates in Physics



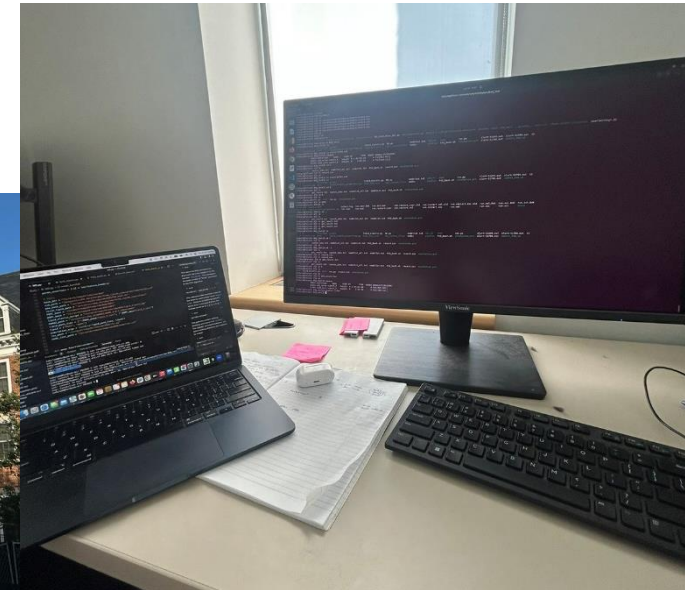
Learning takes place in research labs. Overseas Research Fellowship Scheme (8-10 weeks during summer)

- Participants engage in research field of their own choosing;
- Physics Department **match student's interest with researchers**
- **Reimbursement** of full airfare and partial expenses

2025 summer



Samosiuk Arina (Quantum Computing), **Peking University**



Toby Lam (Biophysics),
Virginia Polytechnic Institute and State University



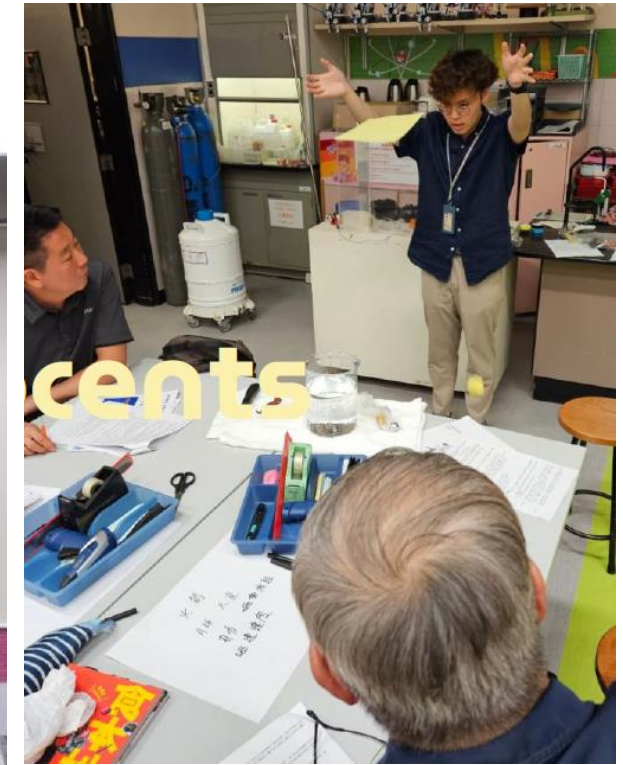
Learning takes place while you are working.

Summer Internship (6-8 weeks during summer)

- Participants engage in actual work to apply their book knowledge
- Department arranges for selected candidates to be interviewed by the institution.

2025 summer

Science Exploration Workshop: Adventure to the Universe





Learning takes place while you are working.

Summer Internship (6-8 weeks during summer)

- Participants engage in actual work to apply their book knowledge
- Department arranges for selected candidates to be interviewed by the institution.



薺色園主辦可觀自然教育中心暨天文館
Ho Koon Nature Education cum Astronomical Centre (Sponsored by Sik Sik Yuen)

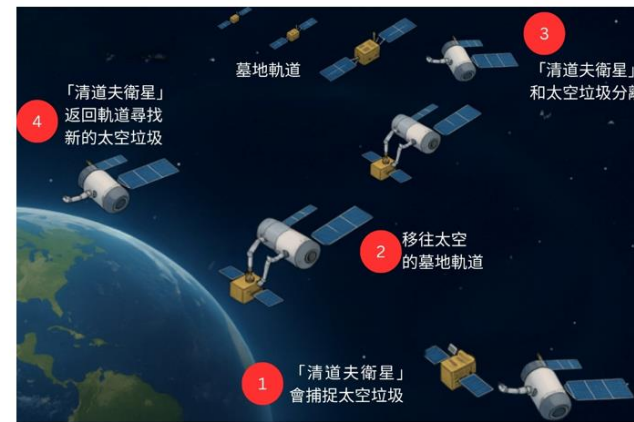
Wong Nok Him

Lead Stargazing Activities



2025 summer

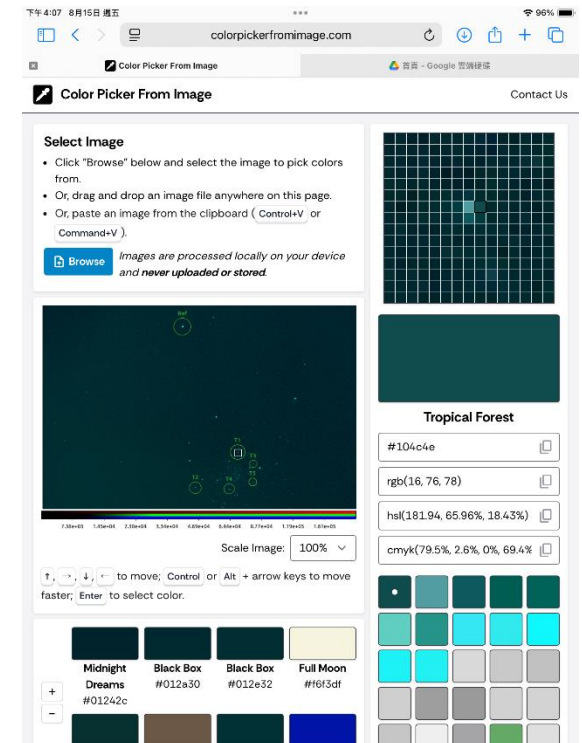
Write Blog Posts and
Social Media Posts



第二種「清道夫衛星」運作概念圖

看似完美的方法，其實暗藏問題。日常生活中，當我們抬高物件時需要「費力」，從科學的用語是增加物件的勢能，讓物件抵抗地心吸力。同樣，轉移軌道也要「費力」。可是，轉移軌道比日常生活中抬高物件更加「費力」，因為太空垃圾更重。因此，推進器和「清道夫衛星」能否有足夠力量抬高太空垃圾成疑。

Development of New Workshop





Learning takes place while you are working.

Summer Internship

(6-8 weeks during summer)

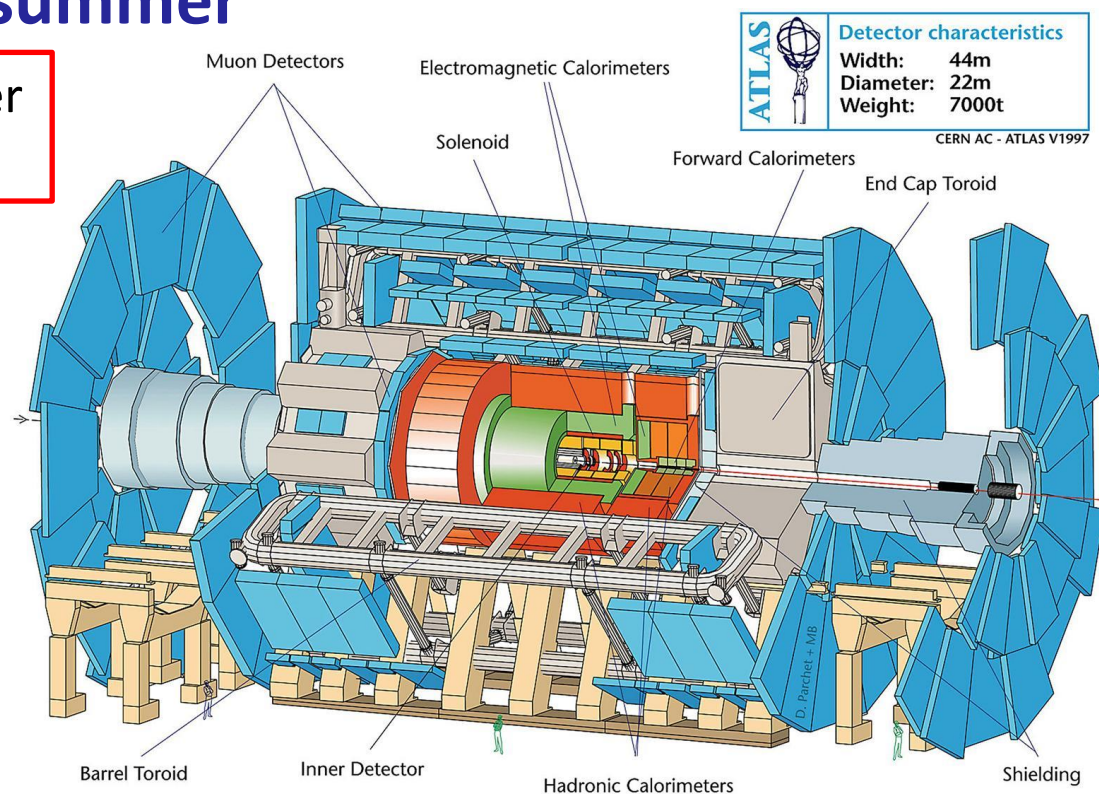
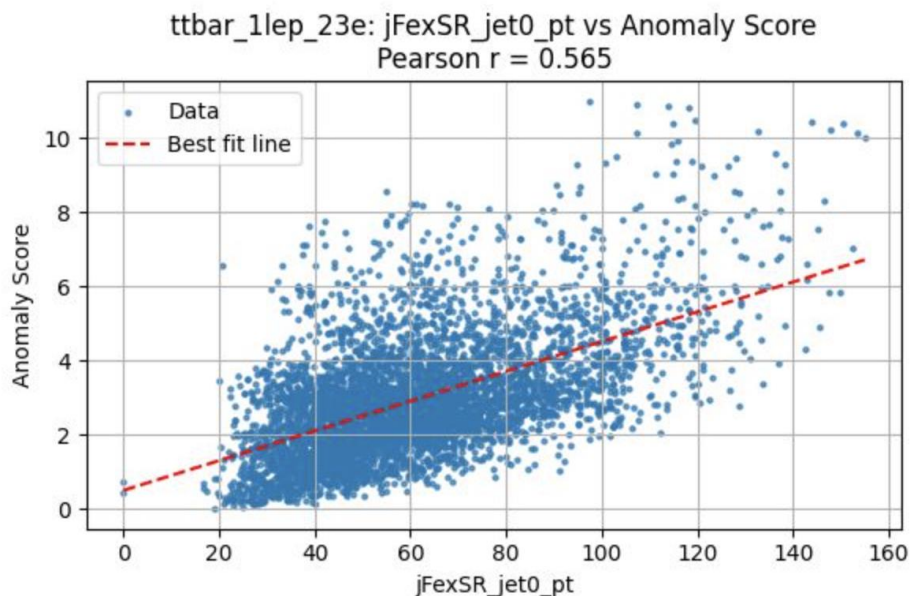
- Participants engage in actual work to apply their book knowledge
- Department arranges for selected candidates to be interviewed by the institution.

2025 summer



Xie Ruiyang

ATLAS Anomaly Trigger Calibration





Learning takes place while you are working.

Summer Internship

(6-8 weeks during summer)

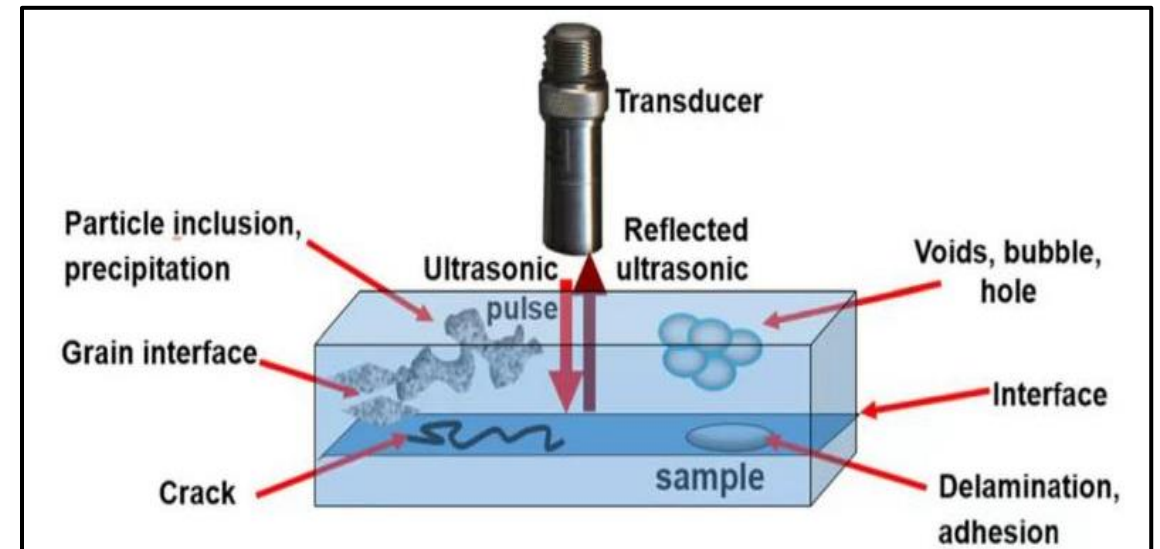
- Participants engage in actual work to apply their book knowledge
- Department arranges for selected candidates to be interviewed by the institution.

2025 summer

Development of X-ray Thickness Gauge



Experiments to Explore Alloy Samples' Physical Properties



 施捷电子有限公司
S J ELECTRONICS CO., LTD.

Lu Jun Ling



Learning takes place while you are teaching.

Summer Internship (Secondary Schools) (6-8 weeks during summer)

- Participants get first-hand experience working both in and out of classroom settings
- Department arranges for selected candidates to be interviewed by the institution.

2025 summer



Li Jun

Buddhist Kok Kwong Secondary School (Summer school tutor for Form 5 and Form 6 students preparing for the HKDSE examination)





Learning takes place while you are teaching.

Summer Internship (Secondary Schools) (6-8 weeks during summer)

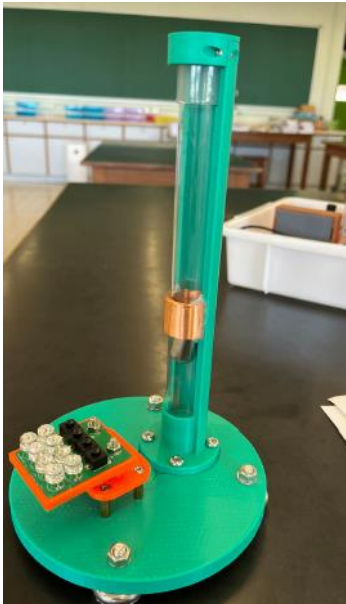
- Participants get first-hand experience working both in and out of classroom settings
- Department arranges for selected candidates to be interviewed by the institution.

2025 summer

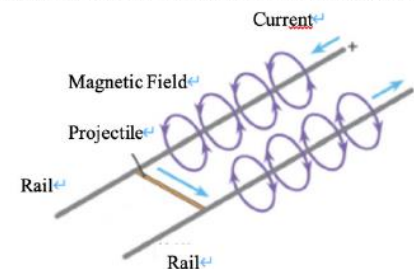
Yu Chun Keung Memorial College No. 2 (Teaching tutorial class, draft worksheets for teaching, help with lab sessions)



Yeung Chin Kwan



Electromagnetic catapults accelerate aircraft to take off speed using an electromagnetic catapult launcher. The diagram below illustrates the structure of the electromagnetic catapult.





Learning takes place outside HKU classroom.

Undergraduate Overseas Experiential Learning activities (1-2 weeks)

Summer School on Nuclear Physics at RIKEN (2016-2019, 2023-2025)

- Together with Peking University & Seoul National University
- 80% of all expenses paid



5 HKU undergraduates who took nuclear physics course and training at RIKEN 2025



Nishina School at RIKEN (Tokyo, Japan)





Our students embark on rewarding careers and further studies after graduation.

Education:

Research Assistant

Physics Panel

Teacher

Program Director

Commerce and
Industry:

Software Engineer

Analyst Programmer

Relation Manager

ESG Global Research Lead

Community,
Social, & Personal
Services

Behavioral Therapist

Research Assistant

Imaging Software Engineer

Employers include: R&D company of industrial AI and Robotics, Market Intelligence company, commercial bank, local universities, secondary schools, Steam education institute, high-tech start-up company, etc.



Georgia Institute of Technology



National University of Singapore



Stanford University



The Chinese University of Hong Kong



The University of Hong Kong



University College London



University of California San Diego



University of Toronto



Hope you will consider to join our family!

**Contact us at physdept@hku.hk
for inquiries**

HKU Department of Physics

Course Selection Guidelines homepage:

https://www.physics.hku.hk/undergraduate_studies/course_selection_guidelines/