



Physics

Newsletter

April | 2022

Associate Head of the Department



■ Dr. Shizhong Zhang has been appointed to be the first Associate Head, which is a new position in the department. He will assist the Head in coordinating and approving the grant applications from the department. He will also be in charge of our two taught postgraduate programs (Master of Science in the field of Space Science and Master of Science in the field of Physics).

Dr. Zhang said, "I feel very honoured to be able to serve the department in the capacity of associate head. In the past years, I have benefited greatly from the assistance and encouragement from the members of the physics department. I thank the people who put their trust on me and will do my best in this new role."

New Master of Science Programmes

■ Tapping into the strength of HKU in astrophysics, planetary science, computational physics, statistics and engineering, the Department of Physics successfully launched the taught postgraduate programme Master of Science in the field of Space Science in 2021. Our first cohort of 25 students has diverse academic backgrounds, with bachelor degrees in physics, astronomy, mathematics, and statistics, to various computer science and engineering disciplines, even extending to geoinformation science and remote sensing. This class of students also has a strong international flavor --- with their first degree institutions from the UK, US, Australia, India, the Netherlands, China, and Hong Kong. We have designed a highly multi-disciplinary curriculum, covering broad areas of science, engineering, and data science related to space, with courses spanning the theoretical, practical, and entrepreneurial aspects of the subject. Graduates of this programme are expected to attain a solid foundation to enter this exciting and growing field, to take advantage of Hong Kong's premier location to capitalise on the growth of Space Science in our region.

[https://www.physics.hku.hk/prospective-students/tpg-admissions/
MScSpaceScience](https://www.physics.hku.hk/prospective-students/tpg-admissions/MScSpaceScience)

From one of the current students, Xiang Feng FOO: "I like how the MSc Space Science programme not only focuses on theoretical skills and hard skills, but also includes courses that enhance students' soft skills such as the Space Entrepreneurship. I believe such a diverse curriculum can prepare students well for their future development."

■ The physics department is going to launch a new exciting taught postgraduate programme: Master of Science in field of Physics, starting to admit students in September, 2022. This programme aims to further equip university graduates with physics or related backgrounds for various career pathways, and provides students an opportunity to learn a wide range of advanced topics in theoretical, computational and experimental physics via taught courses and a capstone research project. Through the systematic postgraduate training in selective subject areas including astronomy, condensed matter physics, device and nano-physics, photonics and quantum information science, the students can deepen and broaden their understanding of physics, and gain transferrable skills for both fundamental research and career prospects. The programme will provide students a stepping stone towards career prosperity.

<https://www.physics.hku.hk/prospective-students/tpg-admissions/MScPhysics>

Staff Movement

- President and Vice-Chancellor of HKU, Prof. Xiang Zhang, has officially affiliated with Physics Department as a Chair Professor.
- Prof. Xiaobo Yin, Department of Mechanical Engineering, has been appointed as Professor (by courtesy) of our department.
- Ms. Mandy Tse of general office has just joined the department as Clerk I.
- Ms. Navis Lau, Clerk II of general office, has left the department. She joined us in 2018.
- Mr. Kei Yeung Wong, Technical Officer, has left the department. He joined us in 2021.
- Ms. Zenobia Ho, Intern, has left the department. She joined us in 2021.



Xiang Feng FOO

Editors:

Dr. Kai-Ming Lee
Prof. Hoi-Kwong Lo



<https://www.physics.hku.hk/>

Awards and Research Highlights

- Prof. Wang Yao has been awarded The 2021 (the Ninth) Nishina Asia Award for "his pioneering contributions to valleytronics in two-dimensional semiconductors and van der Waals heterostructures."

https://www.nishina-mf.or.jp/news_en/2021/08/25/the-2021-the-ninth-nishina-asia-award-is-awarded/

Prof. Yao said, "It is a great honor to receive this award from the Nishina Memorial Foundation. I feel lucky to have joined HKU Physics 13 years ago, which has provided a great platform to develop my career. I would like to thank colleagues who have handed me their unreserved support over the years, and in particular Prof. Fuchun Zhang, our former colleague and head, for his continuous strong support. I also like to thank collaborators, postdocs, and students for the pleasure of making discoveries together."

- Dr. Wenyuan Wang, a Research Assistant Professor (RAP) in our Department, has been awarded an Outstanding Dissertation Award (ODA) by the International Organization of Chinese Physicists and Astronomers (OCPA) "for his outstanding contribution to the studies of a wide spectrum of quantum key distribution (QKD) protocols including the standard decoy state protocol and the more recent measurement-device-independent (MDI)-QKD protocol and twin-field (TF)-QKD protocol."

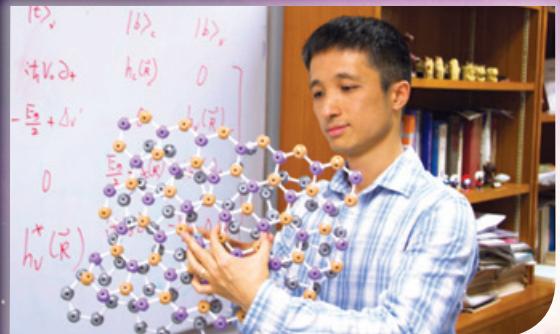
- Chen, W., Zhu, Y., Xiu, J. et al. Monolithic perovskite/organic tandem solar cells with 23.6% efficiency enabled by reduced voltage losses and optimized interconnecting layer. *Nat Energy* (2022).

<https://doi.org/10.1038/s41560-021-00966-8>

- Chien, BB., Liao, Y.D., Chen, Z. et al. Realization of topological Mott insulator in a twisted bilayer graphene lattice model. *Nat Commun* 12, 5480 (2021). <https://doi.org/10.1038/s41467-021-25438-1>

- A Public Lecture – AI and Computational Research: from Quantum Materials to Black Holes.
<https://www.scifac.hku.hk/events/ai-computational-research>

- The "Quantum Cube TM" computing cluster operated by Prof. Parker's group is now available to anyone from the broader astrophysics and planetary sciences community at HKU. (Please contact Dr. Andreas Ritter for details.)



Prof. Wang Yao

Student News

- One of our undergraduate students is the second author of the refereed paper: Parker QA, Zou X, Ritter A. A Preliminary Investigation of CSPN in the HASH Database. *Galaxies*. 2022; 10(1):32. <https://doi.org/10.3390/galaxies10010032>
- Mr Chan Kai Sum, an MPhil student of Prof. H. F. Chau, has received the CareER Scholarship Program 2021 and HKSAR Government Scholarship Fund 2020-21 - Endeavour Merit Award.
- Ms Jasmine Cheung is an undergrad of HKU, working in Dr. Lim's research group for a few years. Here she shares "My experience applying for a PhD in America".



Jasmine Cheung

Hello fellow physics students, I am glad to have the chance to share with you my experience of applying for PhD programs. I am interested in astrochemistry and have recently received PhD in Chemistry program offers from MIT, Caltech, and the University of Arizona. I hope my sharing will be useful as the application processes of chemistry and physics programs are highly similar.

The first thing I did is to check for openings. I followed the research groups' Twitter accounts, checked the group website, asked if my research supervisor could put me into contact with my prospective supervisor, and emailed prospective supervisors directly to inquire about openings.

Then, I scheduled meetings with prospective supervisors via email to know more about their research, funding situation, how it is like to be a member of the group, and let the supervisor know my interest in joining the group, which could be beneficial when they evaluate my application.

For the statement of objectives and personal statements, I sent my drafts to lecturers, current PhD students, and previous colleagues in research groups, and they provided very useful advice for me to improve my statements. Also, I applied for the application mentor program at MIT as a first-generation PhD applicant, which enables me to ask for advice on my CV and statements from a postdoc at MIT.

I am only speaking from my personal experiences. There are still a lot of things to consider during your application and I am not able to talk about all these in one article. If you have any suggestions or would like to reach out, I can be contacted at jasminesyc@hku.hk. Good luck!