

## Green Chemistry: Turning Trash into Treasure 綠色化學：轉廢為材的神奇魔法

*Dr. CHAN Ka Long Donald*  
*Department of Chemistry*  
*The Chinese University of Hong Kong*

With the increasing human population and resource consumption, more and more wastes are generated every year around the world. Waste management becomes a great challenge facing the mankind. Improper waste disposal could result in water pollution and land contamination, while waste treatment requires additional input of chemicals and energy resources. One way to diminish the problem is to turn wastes into resources by recovering usable products in forms of chemicals and energy.

Green chemistry involves the design of chemical products and processes that reduce hazardous substances and wastes. This lecture covers basic concepts in green chemistry and discusses how wastes can be transformed into fuels and other valuable chemicals. Throughout the lecture, we will highlight the recent advances in biomass energy and sustainable plastics. Students will be able to appreciate the importance of chemical knowledge in the sustainable development of our society.

Presentation Mode:	Face to Face / Online
Language of Talk:	English / Cantonese
Suitable Level:	S.4 or above (Prefer students who study Chemistry)
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	December 2024 and April - July 2025
Equipment:	PowerPoint projector, microphone

---

Dr. CHAN Ka Long Donald obtained his B.Sc. and Ph.D. in Chemistry from The Chinese University of Hong Kong in 2012 and 2017 respectively. He subsequently joined the local research and development sectors, working on improvement and commercialization of nano-structured materials and functional polymers. In 2019, he returned to The Chinese University of Hong Kong as a Lecturer. He is also serving as a Deputy Director of the Natural Sciences Programme. His research interests focus on analytical chemistry and environmental applications of advanced materials.

陳家朗博士分別於 2012 年及 2017 年取得香港中文大學化學理學士學位及哲學博士學位。他隨後在本地的研發部門工作，致力推動納米結構材料和功能性聚合物的改良及商品化。他於 2019 年重返香港中文大學成為講師，現時亦擔任自然科學課程副主任。他的研究興趣集中在分析化學和先進材料於環境領域的應用。

## Chemistry of Coffee 咖啡的化學

*Dr. HAU Chun Kit Sam  
Department of Chemistry  
The Chinese University of Hong Kong*

The coffee beverage is one of the favourite drinks in the world. It is prepared from roasted darkly coloured coffee beans, which is also known as “black gold”, to give us a bitter and slightly acidic taste. In this talk, students will learn about the magic behind this impressive beverage, including the information about the coffee grading, the decaffeination process, brewing extraction methods, coffee compounds and derivatives.

Presentation Mode:	Face to Face / Online
Language of Talk:	English / Cantonese
Suitable Level:	S.4 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	October 2024 – July 2025
Equipment:	PowerPoint projector, microphone

---

Dr. HAU Chun Kit Sam received his B.Sc. (First Class Honour) in Chemistry at Hong Kong Baptist University in 2005 and obtained his Ph.D. in the area of Organic Synthesis from the Department of Chemistry of The Chinese University of Hong Kong in 2010. He spent four years in the same department as a postdoctoral fellow, working on X-ray Crystallography and Structural Characterization. In 2019, he returned to the Department of Chemistry of The Chinese University of Hong Kong and is currently a Lecturer. His research focuses on crystal engineering and coordination network assembly.

侯俊傑博士於 2005 年本科畢業於香港浸會大學化學系，2010 年於香港中文大學化學系獲得博士學位。隨後他續在香港中文大學從事了四年多博士後工作，致力研究 X 射線晶體學和晶體結構分析。他於 2019 年重返香港中文大學，並擔任講師。他目前的研究方向是晶體工程和多方位配位化合物的自組裝。

**Nano and Medicine****納米與醫學**

*Professor LI Hung Wing  
Department of Chemistry  
The Chinese University of Hong Kong*

Development of nanomaterials and nanotechnology has been attracting attention in scientific research worldwide during the last decade. Nanomaterials have unique properties that make them very promising to be applied in many different fields, including textile, electronics and medicine. In this talk, I will introduce the basic composition of nanomaterials and their potential applications in biomedical areas.

Presentation Mode:	Face to Face
Language of Talk:	English / Cantonese
Suitable Level:	S.4 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	October 2024 - July 2025
Equipment:	PowerPoint projector, microphone

---

Professor LI Hung Wing is an Associate Professor in the Department of Chemistry, The Chinese University of Hong Kong. She received her B.Sc. degree in Chemistry Science from The Chinese University of Hong Kong and Ph.D. degree in Analytical Chemistry from Iowa State University and post-doctoral training from University of Chicago. Her research interest is development of novel bioanalytical techniques for disease detection and treatment using nano-materials.

## Application of Essential Oil for Hand-Made Skin Care Products

### 香薰油在手工護膚品中的應用

*Dr. LO Chui Man Cat*  
*Department of Chemistry*  
*The Chinese University of Hong Kong*

Essential oil is a kind of aromatic volatile oil extracted from plants. It has been used for thousands of years in various daily applications, such as aromatherapy, cosmetic, home products and mosquito repellents. Due to the presence of different major components, each type of essential oil has different functions. For example, Tea Tree oil can treat acnes, skin fungal and insect bites. Peppermint oil can treat symptoms of common cold, flu and other respiratory uncomfortable. Lemongrass oil can relieve stress, anxiety and depression. Citronella oil is mainly used as mosquito repellent.

In this Popular Science Talk, extraction methods of essential oil from plants will be introduced. Simple experimental procedures for hand-made skin care products will be demonstrated. You can try to do it by yourself at home.

Presentation Mode:	Face to Face
Language of Talk:	Cantonese
Suitable Level:	S.4 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	October 2024 – July 2025 (Afternoon only)
Equipment:	PowerPoint projector, microphone

---

Dr. LO Chui Man Cat (盧翠雯) is a Lecturer in the Department of Chemistry, The Chinese University of Hong Kong. She received her Bachelor of Science (1<sup>st</sup> Class Hons) in Chemistry and Doctor of Philosophy in Chemistry from The Chinese University of Hong Kong. Her teaching and research mainly focus on the application of chemistry in daily life.

**Does Water Always Swirl Counterclockwise in the Northern Hemisphere in the Toilet?**  
**在北半球馬桶水流漩渦一定會逆時針轉動嗎?**

*Dr. AU YEUNG Yee Man Andie*  
*Department of Earth and Environmental Sciences*  
*The Chinese University of Hong Kong*

It has been an urban myth that water swirls counterclockwise in the toilet when you are in the northern hemisphere. Coriolis force is believed to be behind this swirling myth. We do see the effect of Coriolis force in natural phenomena such as typhoon (or as they call hurricanes in the Atlantic). While Coriolis effect in fluid motion is observed on Earth (and some other planets), can we really see that in our toilet bowls?



Picture 1: Typhoon Mangkhut (credits: NASA)

Picture 2: Water swirling in a toilet bowl (credits: internet)

Presentation Mode:	Face to Face / Online
Language of Talk:	English / Cantonese
Suitable Level:	S.3 or above
Talk Duration:	45 minutes
Audience Size:	30 - 40
Speaker Availability:	October 2024 – April 2025
Equipment:	PowerPoint with projector, microphone

---

Dr AU-YEUNG Yee Man Andie joined CUHK as an Assistant Lecturer in the Faculty of Science in 2016 and she is now a Lecturer in Earth and Environmental Sciences Programme. She has been working on atmospheric science research projects and is particularly interested in tropical meteorology. The projects she has worked on include exploring the opportunities to use computer simulation models to make typhoon seasonal forecasts in the Western North Pacific region and how urbanization (or land surface roughness) could affect TC moving tracks.

歐陽綺雯博士於 2016 年以助理講師身份加入香港中文大學，現為地球與環境科學課程講師。在加入中大前，他一直從事有關大氣科學研究，當中對熱帶氣象學尤其有興趣。相關經驗包括研究用電腦模擬方式去預測西北太平洋颱風季度活動，以及城市化對颱風路徑的潛在影響。

## Extreme Weather Forecasting

### 極端天氣預報

*Dr. LI Kwan Kit Ronald*

*Department of Earth and Environmental Sciences*

*The Chinese University of Hong Kong*

Extreme weather events, such as intense heatwaves and devastating floods, are becoming more frequent across the globe. How much do we understand extreme weather? How do weather forecasts perform in terms of these extremes? How is global warming affecting their intensity and frequency? We shall first learn about the fundamentals of weather forecasting. Then, we shall investigate some recent case studies of extreme weather, and our ability as well as limitation in forecasting them. Finally, we shall discuss what the future holds for extreme weather under global warming.

Presentation Mode:	Face to Face / Online
Language of Talk:	English
Suitable Level:	S.4 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	After April 2025
Equipment:	PowerPoint projector, microphone

---

Dr. LI Kwan Kit Ronald is an Assistant Lecturer in the Earth and Environmental Sciences Programme, at The Chinese University of Hong Kong. He received his Ph.D. degree in Atmospheric Physics from the University of Oxford. He is currently teaching courses in clouds and atmospheric dynamics. His research interests include weather and climate forecasting.

**Environmental contaminants in foods****食物裡的環境污染物**

*Dr. LAU Yee Wai Christy*  
*Department of Earth and Environmental Sciences*  
*The Chinese University of Hong Kong*

This talk will explore the critical issue of environmental contaminants in foods, examining their origins, types, and potential health impacts. We will discuss common contaminants, such as pesticides, heavy metals, and microplastics, and their pathways into the food supply. The presentation will highlight current research findings, regulatory measures, and the importance of food safety practices. Additionally, we will address the role of consumers in mitigating exposure through informed choices and sustainable practices. By understanding these contaminants, we aim to raise awareness about food safety and promote healthier eating habits among high school students.

Presentation Mode:	Face to Face / Online
Language of Talk:	English supplemented with Cantonese
Suitable Level:	S.5 or above
Talk Duration:	45 minutes
Audience Size:	20 - 30
Speaker Availability:	October 2024 - July 2025 (Thursday and Friday only)
Equipment:	PowerPoint projector, microphone

---

Dr. LAU Yee Wai Christy is a Lecturer in the Department of Earth and Environmental Sciences, The Chinese University of Hong Kong. She received her B.Sc. and Ph. D degrees in Chemical Technology from The Hong Kong Polytechnic University. Her research interest is on the method development for quality control and biological effects and bioactive compounds of Chinese Medicine. She has been teaching a wide spectrum of courses including Chemistry, Organic and Inorganic chemistry, Principle of environmental Chemistry, Environment and Health, Environmental impact and monitoring, Research Methods, Food and Health (GE) and Environment and Technology (GE).



## Minerals Beneath Our Feet: The Unseen Foundations of Our Daily Live

### 腳下的礦物:我們日常生活的無形基石

*Dr. TAM Pui Yuk Tammy*  
*Department of Earth and Environmental Sciences*  
*The Chinese University of Hong Kong*

Minerals are the building blocks of the Earth's crust and play a vital role in our daily lives, often going unnoticed. This talk will explore the common minerals we encounter regularly and how they are formed through geological processes. From the silica in sand to the diamond in our jewellery and tools, these natural resources are essential to maintaining a sustainable society.

The presentation will discuss the origins of key minerals, tracing their formation from the deep underground reservoirs to their integration into the products and materials we use every day. Participants will have a closer look of these natural resources, and will gain a deeper appreciation for the unseen foundations that support our modern way of life, from the granite that supports our homes to the copper that powers our electronics.

By understanding the formation and features of these minerals, we can learn to better utilize and conserve these natural resources to develop more sustainable practices. Participants will leave with respect for the minerals beneath our feet and insights into how to build a more environmentally conscious future..

礦物是地球地殼的建構塊,在我們的日常生活中扮演著關鍵的角色,然而卻常常被忽視。這場演講將探討我們經常接觸的常見礦物,以及它們是如何通過地質過程形成的。從沙中的矽到我們珠寶和工具中的鑽石,這些自然資源對維持一個可持續的社會至關重要。

本次演講將討論關鍵礦物的起源,追溯它們從深層地下儲藏庫形成,到融入我們日常使用的產品和材料的過程。與會者將能近距離了解這些自然資源,並深切感受到支撐我們現代生活方式的無形基石,從支撐我們房屋的花崗岩到為我們的電子產品供電的銅。

通過了解這些礦物的形成和特點,我們可以學習更好地利用和保護這些自然資源,以發展更加可持續的實踐。參加者將以尊重和理解來看待我們腳下的礦物,並啟發如何建構一個更加富有環保意識的未來。

Presentation Mode:	Face to Face
Language of Talk:	English / Cantonese
Suitable Level:	S.3 or above
Talk Duration:	60 - 75 minutes
Audience Size:	30 - 45
Speaker Availability:	February – March 2025 (Afternoon only)
Equipment:	PowerPoint projector, microphone

---

Dr. TAM Pui Yuk Tammy is a Senior Lecturer in the Department of Earth and Environmental Sciences under Faculty of Science. She joined The Chinese University of Hong Kong in 2016 and is passionate in sharing geology and currently teaching rock-related subjects such as Petrology, Structural Geology, Solid Earth Dynamics in classroom. So as to let student study rocks and associated environments, processes and Earth's tectonic history better, Dr. Tam guides students to explore rocks in the nature of Hong Kong and overseas. Besides teaching, Dr. Tam focuses on developing interactive learning formats to initiate self-learning among students. Dr. Tam graduated from The University of Hong Kong with a Ph.D. in Earth Sciences in 2013. Her dissertation studied the timing and temperature-and-pressure conditions of metamorphism in the Jiaobei massif in the Jiao-Liao-Ji Belt, North China Craton. In order to understand more about our Earth, she loves to explore various geological features in Hong Kong as well as other parts in the world.

譚佩玉博士現為香港中文大學理學院地球與環境科學系的高級講師。她於 2016 年加入香港中文大學，熱心於分享地質學，並現正教授岩石相關的科目，如岩石學、構造地質學、固體地球動力學。為了讓學生更好地學習岩石及相關的環境、過程和地球構造歷史，譚博士引導學生探索香港和海外的岩石。除了教學，譚博士也集中發展互動式的學習模式，以激發學生的自主學習。譚博士於 2013 年從香港大學獲得地球科學博士學位，論文研究了膠北地塊中膠東-遼寧-吉林活動帶的變質時間和溫壓條件。為了更好地了解我們的地球，她熱愛探索香港以及世界其他地區各種地質特徵。

**EarthBioGenome Project: Hong Kong**  
**香港地球生物基因組計劃**

*Professor HUI Ho Lam Jerome*  
*School of Life Sciences*  
*The Chinese University of Hong Kong*

Understanding the biodiversity on Earth is more than just scientific interests, as it can also inform how to maximise the utilisation of its resources in a sustainable way. This is both scientifically and socially important. In terms of science, it will allow better fundamental understanding of the evolution and interactions of organisms on earth, and socially, it will allow new applications development as well as using the resources in a sustainable way. The Earth BioGenome Project, which has been described as a moonshot project for biology, aims to sequence, catalogue, and analyse the genomes of all eukaryotes on Earth, including animals, fungi, and plants. Similar initiatives have already started in different parts of the world, such as the Darwin Tree of Life Project in the United Kingdom, which aims to sequence all eukaryotes in the country in the first phase. The benefits of revealing the genomes of all animals, fungi, and plants in different parts of the world will form an informative base to solve many current issues in human society. Such benefits could range from increasing the understanding of how biodiversity is evolving under climate change, conservation of endangered species, provision of ecosystem services, to discovering of hidden biological knowledge for new technological inventions and development. In this talk, I will introduce to the audience what has been happening as well as the ongoing efforts of the EarthBioGenome Project Hong Kong (EBPHK).

Presentation Mode:	Face to Face
Language of Talk:	English / Cantonese
Suitable Level:	S.5 or above
Talk Duration:	45 - 60 minutes
Audience Size:	20 or above
Speaker Availability:	January - July 2025
Equipment:	PowerPoint projector, microphone

---

Professor HUI Ho Lam Jerome (許浩霖) is the Professor of the School of Life Sciences, and Director of the Biology Programme at The Chinese University of Hong Kong. He received his doctoral degree at The University of Oxford, and his current main research interests include insect and arthropod biology, marine biotechnology, molecular ecology, conservation of biodiversity, zoonotic diseases, insect-plant interactions, and animal evolution.

## **A New Direction in Medicine: Gene and Stem Cell Therapy Technology** **醫學新方向：基因與幹細胞治療技術**

*Professor KWAN Kin Ming*  
*School of Life Sciences*  
*The Chinese University of Hong Kong*

Genes control many aspects of our life. Thus, when there is something wrong with our gene, usually it will result in some sort of disease condition. The advancement in molecular biology and genetic engineering allows scientists to manipulate genes in our body. On the other hand, stem cells are the cellular origin of many different tissues and organs. By studying the biology of stem cells and research on how to induce stem cells to become various cell types of different tissues, scientists are finding out new hope in medicine, which is using stem cells to offer the possibility of a renewable source of replacement cells and tissues. And by combining gene therapy and stem cell technology, scientists are also searching for new direction in medicine through manipulating genes and stem cells so as to offer the possibility of treating different diseases, conditions and disabilities such as Parkinson's and Alzheimer's diseases, diabetes, immunodeficiency, heart disease, and etc. A broad review and the current advancement of the gene and stem cell therapy will be discussed.

Presentation Mode:	Face to Face / Online
Language of Talk:	English / Cantonese
Suitable Level:	S.4 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	October 2024 – July 2025
Equipment:	PowerPoint projector, microphone

---

Professor KWAN Kin Ming (關健明) received his B.Sc. and Ph.D. degrees from The University of Hong Kong in 1990 and 1998 respectively. He then pursued his postdoctoral training in transgenic mouse technology and developmental biology at the University of Texas MD Anderson Cancer Center USA. He joined The Chinese University of Hong Kong in 2006 and he is now the Associate Dean (Education) of the Faculty of Science and Professor in the School of Life Sciences. He awarded the Exemplary Teaching Award of CUHK in 2009, 2013 and 2022 and Vice-Chancellor's Exemplary Teaching Award in 2022. His current research interest focuses on mouse genetics, developmental biology and organogenesis.

**Looks Beneath the Surface: Discovering the Significance of Soil Biodiversity**  
**探索表面之下：認識土壤生物多樣性的重要**

*Dr. LAW Man Suet Michelle*  
*School of Life Sciences*  
*The Chinese University of Hong Kong*

The food that we consume every day is a production from our soils. The soils nurture different kinds of crops and provide us with a stable food supply as one of the ecosystem services. The entire soil ecosystem which is supported by a high diversity of soil organisms, including microbes, bacteria, nematodes, arthropods, and earthworms. In this talk, I will introduce the diversity of soil organisms and how soil biodiversity plays a significant role in maintaining human well-being and sustainability.

Presentation Mode:	Face to Face / Online
Language of Talk:	Cantonese
Suitable Level:	S.3 or above
Talk Duration:	40 mins
Audience Size:	20 - 80
Speaker Availability:	November 2024 – July 2025
Equipment:	PowerPoint projector, microphone

---

Dr. LAW Man Suet Michelle (羅文雪) is a Lecturer at School of Life Sciences, CUHK teaching Biology and Environmental Sciences. Michelle obtained her Bachelor's degree in Ecology and Biodiversity and MPhil degree in Social Science from The University of Hong Kong and subsequently her PhD degree in Geography and Resource Management at CUHK. Her research interests are soil ecology and ecosystem functioning, and environmental education. She is also ISA Certified Arborist and holder of Lantra Awards certificate (UK).

## Glycemic Index and Why Should We Care?

### 為甚麼我們需要關注升糖指數

*Professor LI Cheng  
School of Life Sciences  
The Chinese University of Hong Kong*

Have you ever wondered why some foods give you energy quickly, while others keep you full for longer? The secret lies in something called the Glycemic Index (GI). The GI is a number that tells us how fast our bodies turn the carbohydrates in food into sugar. Foods with a high GI give you a quick energy boost, but that energy can disappear just as quickly, leaving you feeling hungry again. On the other hand, low GI foods release energy slowly, keeping you satisfied and focused for longer. In this talk, we'll explore why understanding the GI of the foods we eat is so important. We'll discuss how making smart food choices can help you manage your energy levels, improve your focus in school, and even maintain a healthy weight. You'll also learn some surprising facts about everyday foods and how they affect your body. Join us to discover how a simple number can make a big difference in your health and well-being!

Presentation Mode:	Face to Face
Language of Talk:	English
Suitable Level:	S.6
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	April 2025 (Afternoon only)
Equipment:	PowerPoint projector, microphone

---

Professor LI Cheng (李成) is an Assistant Professor at the School of Life Sciences, The Chinese University of Hong Kong. He received his B.Sc. degree in Biotechnology from Northwest A&F University and Ph.D. degree in Food Science from The University of Queensland. His research interest is carbohydrate chemistry and nutrition. He is passionate about transforming staple foods into much healthier products with a lower glycemic index.

## Conservation and Restoration of Marine Biodiversity in Urbanized Coasts

*Professor McIlroy, Shelby*  
*School of Life Sciences*  
*The Chinese University of Hong Kong*

Coastal marine habitats support diverse groups of marine species that provide critical services to humanity. As cities grow and human populations increase along coastlines, the nearby marine environments are among the most intensely impacted by pollution, fishing, and landscape changes. As a region, Hong Kong provides unique insight into a future in which booming coastal populations and economies are tightly interconnected with diverse marine ecosystems and their services. Using genetic techniques, we found that, despite being near one of the largest megacities in the world, the Pearl River Delta was an area of high marine biodiversity with many animal species persisting even nearest sources of pollution. However, where these impacts were most intense, there were fewer species relative to more pristine locations. Furthermore, communities at each location were almost entirely distinct in terms of which species were present. This meant that each location represented a unique and important contributor to regional biodiversity. Understanding how the urbanization of coastal areas influences biodiversity is critical to its management and conservation.

Presentation Mode:	Face to Face
Language of Talk:	English
Suitable Level:	S.6
Talk Duration:	30 minutes
Audience Size:	20 - 40
Speaker Availability:	October 2024 – July 2025
Equipment:	PowerPoint projector, microphone

---

Professor McIlroy, Shelby is an Assistant Professor in the School of Life Sciences at the The Chinese University of Hong Kong. She earned her B.Sc. at the University of Florida, a master's degree in marine science at Moss Landing Marine Laboratories in Monterey Bay, California, and then her Ph.D. in Evolution and Ecology from the University of Buffalo in New York. She has been studying marine life in Hong Kong for the last eight years and uses genetic tools to understand the past, present, and future of marine ecosystems.

## Life Science in Daily Life 日常生活中的生命科學

*Prof. NGO Chi Ki Jacky  
School of Life Sciences  
The Chinese University of Hong Kong*

Life science is the study of all living organisms and life processes at all levels from ecological to molecular. While many people refer life science as biology, it is an enormous field of study that also covers genetics, molecular biology, cell biology, biochemistry, food science, biotechnology, ecology, and more. The knowledge of life science teaches us to respect and love the nature and all life forms. It also plays a substantial role in human welfare and helps to create many of our daily needs ranging from food to medicine. In this talk, we will explore how the principles of life sciences are applied in everyday life.

Presentation Mode:	Face to Face
Language of Talk:	English / Cantonese
Suitable Level:	S.3 or above
Talk Duration:	50 minutes
Audience Size:	20 or above
Speaker Availability:	December 2024 - July 2025 (Afternoon only)
Equipment:	PowerPoint projector, microphone

---

Professor NGO Chi Ki Jacky (敖志祺) received his B.Sc., M.Sc., and Ph.D. degrees from the University of California San Diego in 2000, 2003, and 2006 respectively. He then pursued his postdoctoral training in the Division of Hemostasis and Thrombosis at the Beth Israel Deaconess Medical Center of Harvard Medical School. He joined The Chinese University of Hong Kong in 2009 and he is now an Associate Professor in the School of Life Sciences. His current research interest focuses on the structure-function studies of proteins and RNA that are important for cancer development and rare neurodegenerative diseases, and structure-based drug discovery against these diseases.



## Structural Biology and Drug Discovery: How Basic Science Saves Lives 結構生物學和藥物研發：基礎科學如何挽救生命

*Professor NGO Chi Ki Jacky  
School of Life Sciences  
The Chinese University of Hong Kong*

Seeing is believing. To understand how biological macromolecules like RNA, proteins, etc. function and make life possible, scientists rely on a special field of research called structural biology to look at their 3D structures and study how they carry out their functions. However, due to their small sizes, it is no simple task to visualize the macromolecules at atomic detail. Structural biologists thus need to integrate the principles of molecular biology, biochemistry, and biophysics and rely on special techniques like X-ray crystallography, nuclear magnetic resonance (NMR) spectroscopy, and single-particle cryo-electron microscopy to visualize macromolecular structures. The knowledge on the structure-function relationships of different biological macromolecules helps scientists to understand how they interact and work together in our cells to keep us functional and healthy. Structural biology also serves as a powerful tool to understand the mechanisms of diseases and identify potential inhibitor-binding sites on disease-causing macromolecules. With this information, scientists can accelerate the process of drug discovery using a structure-guided approach. In this talk, we will discuss on the major and recent developments in structural biology and how the 3D structures of macromolecules play critical role in drug discovery for various diseases including COVID-19.

Presentation Mode:	Face to Face
Language of Talk:	English / Cantonese
Suitable Level:	S.5 or above
Talk Duration:	50 minutes
Audience Size:	20 or above
Speaker Availability:	December 2024 - July 2025 (Afternoon only)
Equipment:	PowerPoint projector, microphone

---

Professor NGO Chi Ki Jacky (敖志祺) received his B.Sc., M.Sc., and Ph.D. degrees from the University of California San Diego in 2000, 2003, and 2006 respectively. He then pursued his postdoctoral training in the Division of Hemostasis and Thrombosis at the Beth Israel Deaconess Medical Center of Harvard Medical School. He joined The Chinese University of Hong Kong in 2009 and he is now an Associate Professor in the School of Life Sciences. His current research interest focuses on the structure-function studies of proteins and RNA that are important for cancer development and rare neurodegenerative diseases, and structure-based drug discovery against these diseases.

**Take a Look at Biodiversity with Modern Biotechnologies!**  
**來看看如何利用生物技術了解生物多樣性!**

*Dr. Henry SO Wai Lok*  
*School of Life Sciences*  
*The Chinese University of Hong Kong*

Have you ever encountered a crawly creature but had no idea what it was? I'm sure you were confused, and perhaps you would just generically call it "a worm." While you could be right, the creature may actually be something you've never thought about. Individuals of the same species may appear or behave differently, but sometimes they can also bear a striking resemblance to a distantly related organism. These natural phenomena may seem perplexing to you, but rest assured, they have confused many biologists in the past too. With the advancement of biotechnologies, modern biologists are now able to investigate the secrets hidden within a cell's DNA. These hidden messages offer invaluable insights into the identities of organisms and their interrelationships. In this talk, I am going to show you some stunning but meanwhile lovely biological phenomena in the natural world and introduce you to the use of modern biotechnologies for understanding this amazing biodiversity.

Presentation Mode:	Face to Face
Language of Talk:	English / Cantonese
Suitable Level:	S.4 or above
Talk Duration:	45 - 60 minutes
Audience Size:	20 - 70
Speaker Availability:	October 2024 - July 2025
Equipment:	PowerPoint projector, wireless microphone, a long table

---

Dr. Henry SO Wai Lok (蘇瑋樂) is a lecturer in the School of Life Sciences at the Chinese University of Hong Kong. He received his B.Sc. in Biology and Ph.D. in Biology from The Chinese University of Hong Kong in 2017 and 2021, respectively. His research interests are evolution, genomics and soil biodiversity, with an emphasis on myriapods and arthropods. He is particularly keen on developing multimedia methodologies for public science education.

## Finding Sea Slugs: Scientists x Citizen 尋找香港海蛞蝓：公民科學家的力量

*Professor TSANG Ling Ming  
School of Life Sciences  
The Chinese University of Hong Kong*

Since the 1990s, research on marine gastropods, specifically sea slugs, in Hong Kong had come to a halt. However, in 2022, Prof. Tsang Ling Ming from the School of Life Sciences at the Chinese University of Hong Kong, and Prof. David M. Baker from the School of Biological Sciences at the University of Hong Kong, along with their research teams, reignited this study through a citizen science project. They gathered data from Hong Kong divers' sea slug observations and reviewed past literature, resulting in an updated checklist of 257 species of sea slugs recorded in Hong Kong, including 71 new records. The finding highlights the rich marine biodiversity in Hong Kong and the need for further studies. From September 2023, Prof. Tsang Ling Ming and his research team took the studies further by conducting comprehensive underwater surveys of sea slugs in Hong Kong waters, covering the eastern, southern, and western regions. This marked the first extensive underwater survey of sea slugs in Hong Kong in many years. They also continued the citizen science project to collect observation records from divers, aiming to increase public awareness and participation in sea slug research. During the talk, Prof. Tsang Ling Ming will share their research methods and present their findings from the past year and showcase the power of citizen n species discovery.

Presentation Mode:	Face to Face / Online
Language of Talk:	Cantonese
Suitable Level:	S.1 or above
Talk Duration:	30 - 45 minutes
Audience Size:	20 or above
Speaker Availability:	January – May 2025
Equipment:	PowerPoint projector, microphone

---

Professor TSANG Ling Ming is an Assistant Professor in the School of Life Sciences, The Chinese University of Hong Kong. He received his B.Sc. degree in Biology from The Chinese University of Hong Kong and then further pursued his MPhil and Ph.D. degree in CUHK. His research interests are biodiversity, ecology and the evolution of marine invertebrates. He is particularly keen on identifying the factors that generate the species richness in different animal groups and distribution of biodiversity in different habitats and regions. He hopes this information can help scientists to design appropriate conservation strategies to strike a balance between development and environmental quality.

**Problems in Combinatorics: From Counting, Probability to Graph Theory****組合數學的問題：從計數、概率到圖論**

*Dr. CHENG Man Chuen  
Department of Mathematics  
The Chinese University of Hong Kong*

Counting is probably the first taste of Mathematics to many people. It helps us to keep track of quantity and make estimation. Beneath this basic skill lies a fascinating world of techniques that allow us to count more efficiently. They also lead to a deeper understanding of the underlying hidden patterns. Combinatorics is a branch of mathematics that studies these counting principles, patterns and their properties. In this talk, we will explore different facets of combinatorics. We will discuss a few interesting problems in counting, probability and graph theory.

Presentation Mode:	Face to Face
Language of Talk:	English / Cantonese
Suitable Level:	S.4 or above
Talk Duration:	45 - 60 minutes
Audience Size:	20 or above
Speaker Availability:	December 2024 – July 2025
Equipment:	PowerPoint projector, microphone

---

Dr. CHENG Man Chuen received his B.Sc. and M.Phil. in Mathematics from the Chinese University of Hong Kong and his Ph.D. in Mathematics from Stanford University. His research interest lies in algebraic topology, with a focus on equivariant stable homotopy theory, group representation and cohomology.

## Primes, Number Theory and Algebra

### 質數、數論與代數

*Dr. Charles C. C. LI*

*Department of Mathematics*

*The Chinese University of Hong Kong*

Prime numbers are those numbers divisible by one and itself only. They are the ‘atoms’ of numbers. The study of primes has been one of the important human intellectual pursuits since Euclid. Despite the simple looking definition of primes, the primes are shrouded with a lot of mysteries, especially because the primes are miraculously connected to the nature. Some of the mysteries are:

- 1) How do the primes help in the searching of extra-terrestrials?
- 2) Why do some cicadas emerge above ground every 13 or 17 years?
- 3) How are primes used in sending secret information over the internet?
- 4) Why are they related to a notorious Intel Pentium processor bug that triggered the company to recall all the processors?
- 5) How prime can be used to create an algebraic structure like real numbers which has addition, multiplication and division?
- 6) What is modular arithmetic? How it leads to an algebraic structure called “Group”? How this new algebraic structure is related to cryptography?

In this talk, we will discuss theory of primes, its roles number theory and application to algebra.

Presentation Mode:	Face to Face / Online
Language of talk:	Cantonese
Suitable Level:	S.1 or above
Talk Duration:	60 mins
Audience Size:	20 or above
Speaker Availability:	October 2024 - July 2025 (Afternoon only)
Equipment:	PowerPoint with projector, microphone

---

Dr. LI Chun Che Charles (李俊捷) obtained his B.Sc. from The Chinese University of Hong Kong (CUHK) and Ph.D. degree from the University of California at Los Angeles (UCLA). He held research positions at UCLA and Academia Sinica, Taiwan before joining The Chinese University of Hong Kong in 2007. His current research interest includes number theory, automorphic forms and representation theory.

## Shaping the World with Trigonometry 用三角學塑造世界

*Dr. Wong Chak Fu Jeff*  
*Department of Mathematics*  
*The Chinese University of Hong Kong*

Trigonometry is a branch of mathematics that enables us to solve geometric problems that cannot be solved using classical geometry. The word "trigonometry" has Greek roots - "trigon" and "metria," which mean "triangle measurement." This talk explores the relationship between trigonometry and triangles, trigonometry and circles, trigonometric identities, radians, and trigonometric graphs. Numerous illustrative examples are presented and discussed to help beginners understand the real-life applications of trigonometry. Additionally, we will showcase dynamic Shiny apps featuring various tools and visuals that offer innovative methods for teaching and learning trigonometry.

Understanding the content of this presentation only requires simple algebra calculations. For more information about my latest and past popular science talks, please visit the following link:

<https://www.math.cuhk.edu.hk/~jwong/pst.html>

三角學確實是一個令人著迷的數學分支，它在塑造世界中發揮著重要作用。讓我們深入探討一下三角學的關鍵概念。“三角學”一詞源自希臘語“trigon”和“metria”，意思是“三角形測量”。本演講探討了三角學與三角形、三角學與圓、三角恆等式、弧度和三角圖之間的關係。通過提供許多說明性示例，我們可以幫助同學們更好地理解三角學的實際應用。此外，我們還將展示包含各種工具和視覺效果的動態 Shiny 應用程序，這些都是教學和學習三角學的創新方法。

理解本講座的内容只需要具備基本的代數計算知識。如需了解有關我最近和過去的科普講座的更多信息，請訪問以下鏈接：

<https://www.math.cuhk.edu.hk/~jwong/pst.html>

Presentation Mode:	Face to Face
Language of Talk:	Cantonese and English
Suitable Level:	S.3 or above
Talk Duration:	40 - 50 minutes
Audience Size:	20 - 100
Speaker Availability:	<ul style="list-style-type: none"><li>• October 2024 – April 2025 (Friday only)</li><li>• May 2025 – June 2025</li></ul>
Equipment:	Computer & Projector (pdf)

---

---

Dr. Jeff C. F. Wong (黃澤富) holds a B.Sc. in Mathematics and a M.Sc. in Geodesy from the University of New Brunswick in Canada and Ph.D. degree in Mathematics from the Chinese University of Hong Kong. His research interests include: Artificial Intelligence, Board Games, Educational Data Mining, Machine Learning, and Quantitative Social Network Analysis. He is currently a Senior Lecturer in the Department of Mathematics at the Chinese University of Hong Kong.

## Data Fitting and Its Applications 數據擬合及其應用

*Dr. Wong Chak Fu Jeff*  
*Department of Mathematics*  
*The Chinese University of Hong Kong*

Understanding how to fit linear, quadratic, and exponential models to data is essential in science, engineering, economics, and business. By comparing model predictions with observed data, we can gain valuable insights. This involves going through the modeling process to find the best-fitting line and applying our findings to predict future data. To make this easier to grasp, we will explore real-world examples using our Shiny data fitting calculator to illustrate the practical applications of data fitting using mathematical methods.

Understanding the content of this presentation only requires simple algebra calculations. For more information about my latest and past popular science talks, please visit the following link:

<https://www.math.cuhk.edu.hk/~jwong/pst.html>

在科學、工程、經濟和商業領域至關重要。通過將線性、二次和指數模型與觀察到的數據進行比較，我們可以獲得有價值的見解。這涉及透過建模過程來找到最合適的曲線，並應用我們的發現來預測未來的數據。為了使這一點更容易掌握，我們將使用 Shiny 的數據擬合計算器探索現實世界的範例，以說明使用數學方法進行數據擬合的實際應用。

理解本講座的內容只需要具備基本的代數計算知識。如需了解有關我最近和過去的科普講座的更多信息，請訪問以下鏈接：

<https://www.math.cuhk.edu.hk/~jwong/pst.html>

Presentation Mode:	Face to Face
Language of Talk:	Cantonese and English
Suitable Level:	S.3 or above
Talk Duration:	40 - 50 minutes
Audience Size:	20 - 100
Speaker Availability:	<ul style="list-style-type: none"><li>• October 2024 – April 2025 (Friday only)</li><li>• May 2025 – June 2025</li></ul>
Equipment:	Computer & Projector (pdf)



---

Dr. Jeff C. F. Wong (黃澤富) holds a B.Sc. in Mathematics and a M.Sc. in Geodesy from the University of New Brunswick in Canada and Ph.D. degree in Mathematics from the Chinese University of Hong Kong. His research interests include: Artificial Intelligence, Board Games, Educational Data Mining, Machine Learning, and Quantitative Social Network Analysis. He is currently a Senior Lecturer in the Department of Mathematics at the Chinese University of Hong Kong.

## The Power of Average 平均的力量

*Dr. Wong Chak Fu Jeff  
Department of Mathematics  
The Chinese University of Hong Kong*

The measures of central tendency focus on finding the centre point or typical value of a dataset. These statistics help us understand where the most values in a distribution cluster are. The three most common measures of central tendency are the mean, median, and mode. Pythagoras introduced three fundamental types of averages: Arithmetic Mean, Geometric Mean, and Harmonic Mean. Collectively, these are known as the Pythagorean means. Since then, additional averages have been developed, including Kolmogorov's Generalized f-mean. This talk will explore the practical applications of different types of averages using real-life data. Additionally, we will showcase our Shiny apps, which feature various tools and graphics to aid in understanding and computing averages.

Understanding the content of this presentation only requires simple algebra calculations. For more information about my latest and past popular science talks, please visit the following link:

<https://www.math.cuhk.edu.hk/~jwong/pst.html>

在統計中，中心趨勢的測量總結了資料集的中心點或典型值。這些統計數據幫助我們了解分佈集群中大多數值的位置。其中，三個最常見的中心趨勢測量是平均數、中位數和眾數。它可以幫助我們了解資料集中的主要趨勢。此外，古希臘數學家畢達哥拉斯引入了三種基本類型的平均數：算術平均數、幾何平均數和調和平均數。從那時起，其他平均值也被開發出來，包括 Kolmogorov 的廣義 f 均值。在本次演講中，同學將掌握不同平均值如何在現實生活場景中的各種資料集上執行的基本概念，並可以立即將其應用到其他領域。此外，我們還將展示我們的 Shiny 應用程序，其包含各種工具和圖形，以幫助理解和計算平均值。

理解本講座的内容只需要具備基本的代數計算知識。如需了解有關我最近和過去的科普講座的更多信息，請訪問以下鏈接：

<https://www.math.cuhk.edu.hk/~jwong/pst.html>

Presentation Mode:	Face to Face
Language of Talk:	Cantonese and English
Suitable Level:	S.3 or above
Talk Duration:	40 - 50 minutes
Audience Size:	20 - 100
Speaker Availability:	<ul style="list-style-type: none"> <li>October 2024 – April 2025 (Friday only)</li> <li>May 2025 – June 2025</li> </ul>
Equipment:	Computer & Projector (pdf)

---

---

Dr. Jeff C. F. Wong (黃澤富) holds a B.Sc. in Mathematics and a M.Sc. in Geodesy from the University of New Brunswick in Canada and Ph.D. degree in Mathematics from the Chinese University of Hong Kong. His research interests include: Artificial Intelligence, Board Games, Educational Data Mining, Machine Learning, and Quantitative Social Network Analysis. He is currently a Senior Lecturer in the Department of Mathematics at the Chinese University of Hong Kong.

## Nature's Mathematical Secrets: Ratios and Symmetry

### 大自然的數學秘密：比率和對稱性

*Dr. Wong Chak Fu Jeff*  
*Department of Mathematics*  
*The Chinese University of Hong Kong*

Direct proportion is the relationship between two quantities where the ratio of the two is equal to a constant value. This presentation establishes the fundamental relationships underlying the Fibonacci Sequence, Pascal's Triangle, and the Golden Ratio. We will explore and discuss the diverse applications of the Fibonacci Sequence, Pascal's Triangle, and the Golden Ratio across various fields such as mathematics, computer science, finance, biology, art, music, and recreational mathematics. These discussions highlight their real-world applications in various domains of human endeavor.

Understanding the content of this presentation only requires simple algebra calculations. For more information about my latest and past popular science talks, please visit the following link:

<https://www.math.cuhk.edu.hk/~jwong/pst.html>

正比例是兩個量之間的關係，其中兩個量的比率等於一個常數值。本演示建立了斐波那契數列、帕斯卡三角和黃金比例的基本關係。我們將探索和討論斐波那契數列、帕斯卡三角和黃金比例在數學、電腦科學、金融、生物學、藝術、音樂和娛樂數學等各領域的多样化應用，強調了它們在多個領域中的應用。

理解本講座的內容只需要具備基本的代數計算知識。如需了解有關我最近和過去的科普講座的更多信息，請訪問以下鏈接：

<https://www.math.cuhk.edu.hk/~jwong/pst.html>

Presentation Mode:	Face to Face
Language of Talk:	Cantonese and English
Suitable Level:	S.3 or above
Talk Duration:	40 - 50 minutes
Audience Size:	20 - 100
Speaker Availability:	<ul style="list-style-type: none"><li>• October 2024 – April 2025 (Friday only)</li><li>• May 2025 – June 2025</li></ul>
Equipment:	Computer & Projector (pdf)

---

---

Dr. Jeff C. F. Wong (黃澤富) holds a B.Sc. in Mathematics and a M.Sc. in Geodesy from the University of New Brunswick in Canada and Ph.D. degree in Mathematics from the Chinese University of Hong Kong. His research interests include: Artificial Intelligence, Board Games, Educational Data Mining, Machine Learning, and Quantitative Social Network Analysis. He is currently a Senior Lecturer in the Department of Mathematics at the Chinese University of Hong Kong.

## Making Better Decisions Using Probability Tree Diagrams 使用機率樹圖做出更好的決策

*Dr. Wong Chak Fu Jeff  
Department of Mathematics  
The Chinese University of Hong Kong*

Make better decisions using probability tree diagrams which help the decision-maker to analyze complex situations with numerous alternatives and a wide range of potential consequences and to determine a course of action aligned with the decision-maker's economic and psychological preferences. This talk offers easy-to-understand solution steps for any decision problem. We will explain how to use these diagrams to break down large, complex decision problems into smaller components, allowing us to obtain effective solution strategies and criteria. Examples will be discussed, including scenarios such as board game designs, 'Deal or No Deal,' comparisons between losses and gains, considerations of risk aversion versus risk-seeking behaviour, and game theory analysis. We will also introduce software with tools and visuals to help you learn about creating and using probability trees to improve decision strategies.

Understanding the content of this presentation only requires simple algebra calculations. For more information about my latest and past popular science talks, please visit the following link:

<https://www.math.cuhk.edu.hk/~jwong/pst.html>

使用機率樹圖可以說明決策者分析複雜情況，特別是涉及多種替代方案和廣泛潛在後果的決策。通過機率樹圖，我們可以確定符合決策者經濟和心理偏好的行動方案。在這次講座中我們將探討如何使用機率樹圖解決各種決策問題。我們討論如何將大型複雜的決策問題分解為更小的組件，使我們能夠獲得有效的解決策略和標準。我們將討論一些例子，包括棋盤遊戲設計、「交易或不交易」等場景、損失和收益之間的比較、風險規避與風險尋求行為的考慮以及博弈論分析。此外，我們還將介紹配備各種工具和視覺效果的軟件，幫助學習創建和使用機率樹圖，以找到更好的決策策略。

理解本講座的內容只需要具備基本的代數計算知識。如需了解有關我最近和過去的科普講座的更多信息，請訪問以下鏈接：

<https://www.math.cuhk.edu.hk/~jwong/pst.html>

Presentation Mode:	Face to Face
Language of Talk:	Cantonese and English
Suitable Level:	S.3 or above
Talk Duration:	40 - 50 minutes
Audience Size:	20 - 100
Speaker Availability:	<ul style="list-style-type: none"><li>• October 2024 – April 2025 (Friday only)</li><li>• May 2025 – June 2025</li></ul>
Equipment:	Computer & Projector (pdf)

---

Dr. Jeff C. F. Wong (黃澤富) holds a B.Sc. in Mathematics and a M.Sc. in Geodesy from the University of New Brunswick in Canada and Ph.D. degree in Mathematics from the Chinese University of Hong Kong. His research interests include: Artificial Intelligence, Board Games, Educational Data Mining, Machine Learning, and Quantitative Social Network Analysis. He is currently a Senior Lecturer in the Department of Mathematics at the Chinese University of Hong Kong.

## How Do We Rebuild the Universe?

### 如何重塑宇宙

*Prof. CHAN Tsang Keung  
Department of Physics  
The Chinese University of Hong Kong*

How does the universe form? Why is life possible? Why do we exist? To address these questions, astronomers create virtual universes in super-computers by employing physical models of gas, stars, and gravity. By comparing these virtual universes with real observations, astronomers gain insights into the formation and evolution of our universe, our galaxy, and our planet. In this talk, I will take you on a fascinating journey to explore these virtual universes and unveil the deepest secrets of our universe.

Presentation Mode:	Face to Face / Online
Language of Talk:	English / Cantonese
Suitable Level:	S.4 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	October 2024 - July 2025
Equipment:	PowerPoint projector, microphone

---

Professor CHAN Tsang Keung (陳增強) is an Assistant Professor in the Department of Physics at the Chinese University of Hong Kong. He received his B.Sc. and M.Phil. in Physics from the Chinese University of Hong Kong and Ph.D. in Physics from the University of California at San Diego. His research interest is computer simulation for solving astrophysical problems, including cosmology, galaxy, and star formation. He is developing modern numerical simulation codes, e.g. incorporating energetic particles and radiation. Through these simulations, he aims to address the prominent astrophysical problems, including how galaxies and stars form and evolve, and decrypting the nature of dark matter.



## The Birth of Stars

### 恆星的誕生

*Professor LI Hua Bai*  
*Department of Physics*  
*The Chinese University of Hong Kong*

Over the course of the last century, astronomers have been able to decipher the evolution and death of stars through the study of stellar evolution. Contrary to this, we do not yet have a comprehensive understanding of the process by which stars were born. Star formation is a process which enhances the density from  $\sim 1$  H atom/cc in galactic spiral arms to  $\sim 10^{24}$  H atom/cc in stars. There seems to be no doubt that gravity has played a role in density enhancement, but if gravity is the only factor at play, the Milky Way should have many more stars than it does. A review of the modern picture of star formation will be presented, with particular emphasis on CUHK's contribution.

Presentation Mode:	Face to Face / Online
Language of Talk:	English / Mandarin
Suitable Level:	S.1 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	October 2024 - July 2025
Equipment:	PowerPoint projector, microphone

---

Professor LI Hua Bai received the Ph.D. degree in astrophysics from Northwestern University in 2006. Afterwards, he had worked in the Harvard-Smithsonian Center for Astrophysics and Max Planck Institute for Astronomy. In Aug. 2013, he started his professorship in the Department of Physics, The Chinese University of Hong Kong. His research group study how magnetic fields and turbulence regulate star formation; they use various novel methods in observations, numerical simulations and instrumentation.

**Behind the Giant Dishes****開箱天文望遠鏡**

*Professor LI Hua Bai  
Department of Physics  
The Chinese University of Hong Kong*

We are constructing an astronomical camera to operate with the Greenland Telescope (GLT). There are only three submillimeter telescopes larger than 10 meters worldwide, including the GLT. The camera will not only secure observing time for Hong Kong astronomers but also be the first professional astronomical instrument led by Hong Kong from scratch. From ancient galaxies and Milky Way star formation to supernova remnants, the camera serves as a new window to explore a wide range of astronomical phenomena.

We named the camera ROGER - Remote Observing from Greenland. I will explain why ROGER needs to go all the way to Greenland, why the detectors need to work at -273 degrees Celsius, and how ROGER can see magnetic fields thousands of light-years away.

Presentation Mode:	Face to Face / Online
Language of Talk:	English / Mandarin
Suitable Level:	S.1 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	October 2024 - July 2025
Equipment:	PowerPoint projector, microphone

---

Professor LI Hua Bai received the Ph.D. degree in astrophysics from Northwestern University in 2006. Afterwards, he had worked in the Harvard-Smithsonian Center for Astrophysics and Max Planck Institute for Astronomy. In Aug. 2013, he started his professorship in the Department of Physics, The Chinese University of Hong Kong. His research group study how magnetic fields and turbulence regulate star formation; they use various novel methods in observations, numerical simulations and instrumentation.

## From General Relativity to Compact Objects 從廣義相對論到致密天體

*Dr. LIN Lap Ming*  
*Department of Physics*  
*The Chinese University of Hong Kong*

萬有引力操控潮汐漲退，星體運行以至宇宙的演化。它跟我們有着密切的關係。科學家運用牛頓在三百多年前提出的引力理論能夠解釋許多天文現象，直到愛因斯坦在 1915 年發表廣義相對論來取代牛頓的理論。這講座旨在淺談廣義相對論的基本概念及物理學家是如何應用廣義相對論來研究中子星和黑洞這些引力強大的致密天體。

Presentation Mode:	Face to Face / Online
Language of Talk:	Cantonese
Suitable Level:	S.4 or above
Talk Duration:	60 minutes
Audience Size:	20 or above
Speaker Availability:	January - July 2025
Equipment:	PowerPoint projector, microphone

---

練立明博士畢業於香港中文大學物理系，其後在美國聖路易斯華盛頓大學取得物理學哲學博士學位。畢業後，他在巴黎天文台擔任研究員，現為香港中文大學物理系高級講師。其研究興趣包括理論天文物理及廣義相對論。

## **Stellar Evolution**

### **恆星—從哪裏來？往哪裏去？**

*Dr. LIN Lap Ming*  
*Department of Physics*  
*The Chinese University of Hong Kong*

恆星究竟是如何形成的呢？在它們漫長的演化過程中，恆星會有什麼改變呢？為什麼天文學家相信擁有大質量的恆星到最後會變成宇宙中最奇特的天體—黑洞？講者將會逐一回答以上問題，從而揭示恆星的一生。

Presentation Mode:	Face to Face / Online
Language of Talk:	Cantonese
Suitable Level:	S.4 or above
Talk Duration:	60 minutes
Audience Size:	20 or above
Speaker Availability:	January - July 2025
Equipment:	PowerPoint projector, microphone

---

練立明博士畢業於香港中文大學物理系，其後在美國聖路易斯華盛頓大學取得物理學哲學博士學位。畢業後，他在巴黎天文台擔任研究員，現為香港中文大學物理系高級講師。其研究興趣包括理論天文物理及廣義相對論。

## How Order Emerges in Life? 生命物質怎樣產生有序性？

*Professor WU Yilin  
Department of Physics  
The Chinese University of Hong Kong*

Self-organization is a hallmark of living systems and it confers important biological functions, ranging from subcellular organelle biogenesis to embryo development, and to coordinated organ activities. Emergence of spatiotemporal order in living systems often requires intricate chemical signaling between cells that coordinates or synchronizes cellular behavior, gene expression and differentiation. By contrast, here I will highlight the essential roles of physical mechanisms and mechanical forces in driving biological self-organization. Understanding the physical principles of biological self-organization will help to elucidate the origin of life and may inspire the engineering of life-like materials.

自組織是生命系統的標誌性特徵。它和生命系統的關鍵功能密切相關，例如亞細胞結構的形成，胚胎發育和器官活動。生命系統中時空有序性的出現通常依賴複雜的化學訊號傳導來調控細胞行為、基因表現和分化。與此相反，在這裡我將強調物理機制和力學因素在推動生物自組織的重要作用。認識生物自組織的物理原理將有助於理解生命的起源，並可能啟發類生命材料的工程設計。

Presentation Mode:	Face to Face
Language of Talk:	English / Mandarin
Suitable Level:	S.1 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	October 2024 to July 2025 (Afternoon of Tuesday and Thursday)
Equipment:	PowerPoint projector, microphone

---

吳藝林教授 2004 年本科畢業於中國科學技術大學，2009 年獲得美國聖母大學博士學位，隨後到美國哈佛大學作博士後研究，2012 年加入香港中文大學大學物理系。其研究興趣是生命物質的物理。

## Invisible Cloaks 各類隱身衣漫談

*Professor XU Lei*  
*Department of Physics*  
*The Chinese University of Hong Kong*

隱身技術一直以來都是人類夢寐以求的神秘力量：從《西遊記》裡孫悟空的神通隱身，到《哈利波特》中哈利的魔法隱身斗篷，這種奇異的想法一直牽動著全球人民的想像。隨著科學的進步，各式各樣的隱身衣在不同的物理環境中已經得到實現，並持續成為科學界研究的熱門話題。隱身衣背後的科學原理究竟是什麼？市面上存在哪些不同類型的隱身裝置？它們又是如何被開發出來的？想像一下，如果有一天你能夠穿上隱身衣，你會如何用這件奇妙的衣物給你的親朋好友帶來一場別開生面的驚喜（或許也帶點驚嚇）？如果這些問題激起了你的好奇心，那麼這報告正是為你精心準備的，帶你一探隱身衣的奧秘。

Presentation Mode:	Face to Face / Online
Language of Talk:	Mandarin
Suitable Level:	S.1 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	April 2025 (Afternoon only)
Equipment:	PowerPoint projector, microphone

---

Professor XU Lei is a Professor in the Department of Physics. He received his PhD degree in Physics Department from The University of Chicago in 2006 and B.Sc. degree from The University of Science and Technology of China in 2000. His research focuses on the everyday life phenomena such as invisible hydrodynamic metamaterials, drop splashing, paint drying, freezing and melting.

## Expansion of the Universe

### 宇宙的膨胀

*Professor YAN Renbin  
Department of Physics  
The Chinese University of Hong Kong*

The word “Universe” means everything there is --- all the matter and space. People used to believe that the Universe is eternal, with no beginning or end. However, astronomical observations in the past 100 years changed our perspective completely, leading us to a picture in which the Universe only started about 13.8 billion years ago, in a “Big Bang” --- a huge expansion of space from a singularity point. What observations led us to this physical picture? What does the expansion of the Universe mean? Will it keep expanding forever? I will try to answer these questions in my talk.

Presentation Mode:	Face to face / Online
Language of Talk:	English / Mandarin
Suitable Level:	S.4 or above
Talk Duration:	45 minutes
Audience Size:	20 - 80
Speaker Availability:	October 2024 - July 2025
Equipment:	PowerPoint projector, microphone

---

Professor YAN Renbin (嚴人斌) is an Associate Professor in the Department of Physics at the Chinese University of Hong Kong. He received his B.Sc. degree in Physics from Peking University and Ph.D. degree in Astrophysics from the University of California at Berkeley. He has led a few large international astronomy projects obtaining spectra for large samples of stars and galaxies to help us understand the interstellar medium of galaxies and how galaxies evolve. Currently, he is building the next generation spectroscopy instruments for an ambitious project to map the gas and dust in our own Milky Way and nearby galaxies.

## Unlock the Secrets of the Universe with Spectroscopy 用光譜來揭開宇宙的奧秘

*Professor YAN Renbin  
Department of Physics  
The Chinese University of Hong Kong*

Light is the most important media through which we see the Universe. Light is electromagnetic wave and can have many different wavelengths. Astronomers study the Universe not only by taking beautiful pictures of light emitted by stars and galaxies in the Universe, but also by taking the spectrum of the light they emit. If an image is worth a thousand words, then a spectrum is worth a thousand pictures. In my talk and through a demo, I will explain and demonstrate how we obtain spectrum of objects and how these spectra could help us understand the celestial objects and interesting phenomena in the Universe.

Presentation Mode:	Face to face / Online
Language of Talk:	English / Mandarin
Suitable Level:	S.4 or above
Talk Duration:	45 minutes
Audience Size:	20 - 50
Speaker Availability:	October 2024 - July 2025
Equipment:	PowerPoint projector, microphone

---

Professor YAN Renbin (嚴人斌) is an Associate Professor in the Department of Physics at the Chinese University of Hong Kong. He received his B.Sc. degree in Physics from Peking University and Ph.D. degree in Astrophysics from the University of California at Berkeley. He has led a few large international astronomy projects obtaining spectra for large samples of stars and galaxies to help us understand the interstellar medium of galaxies and how galaxies evolve. Currently, he is building the next generation spectroscopy instruments for an ambitious project to map the gas and dust in our own Milky Way and nearby galaxies.



**From Big Data to Smart Data**  
**大數據的智能演繹**

*Professor CHAN Kin Wai*  
*Department of Statistics*  
*The Chinese University of Hong Kong*

Everyone can do data analysis in this era of data-driven society. However, not everyone can extract the correct science from data. In this talk, we will present some simple, yet not trivial, rules that guide us to convert big data to "smart data". We will also discuss the curses and blessings of computer-intensive big data analysis. Topics covered in this talk may include differential privacy, prediction interval, and Monte Carlo simulation.

Presentation Mode:	Face to face / Online
Language of Talk:	Cantonese supplemented with English
Suitable Level:	S.4 or above
Talk Duration:	60 minutes
Audience Size:	20 or above
Speaker Availability:	February – June 2025
Equipment:	PowerPoint projector, microphone

---

Professor CHAN Kin Wai (陳健威) is an Associate Professor in the Department of Statistics, The Chinese University of Hong Kong. He received his B.Sc. degree in Risk Management Science from The Chinese University of Hong Kong and Ph.D. degree in Statistics from Harvard University. His research interest is statistical inference for dependent data and incomplete data. He is particularly keen on developing elegant statistical theories and creating new methodologies that strike a nice balance between statistical and computational properties.

**Application of Statistics in Business****統計在商業之應用**

*Dr. HO Kwok Wah*  
*Department of Statistics*  
*The Chinese University of Hong Kong*

In this era of big data, statistical knowledge is becoming more and more important for companies in different industries. In this talk, I am going to explain two applications of statistics in business. The first one is about how basic statistical theories help insurance companies to determine the premiums of their insurance products. The second one is about how banks can use statistical methods to assess the qualities of potential borrowers so as to make better lending decisions.

Presentation Mode:	Face to Face
Language of Talk:	Cantonese
Suitable Level:	S.5 or above
Talk Duration:	30 - 45 minutes
Audience Size:	20 - 50
Speaker Availability:	October 2024 – November 2024 (Thursday and Friday only) January 2025 – July 2025 (Monday and Thursday only)
Equipment:	PowerPoint projector, microphone

---

Dr. HO Kwok Wah (何國華) holds B.B.A., B.Sc., M.Phil. and Ph.D. degrees from The Hong Kong University of Science and Technology. Dr. Ho is currently a Lecturer in the Department of Statistics at The Chinese University of Hong Kong. His research interests cover MCMC algorithms, Bayesian statistics, financial time series and credit risk models.

**From Stands to Statistics: Uncover the Secrets in Sports Data**  
**從看台到統計：揭開體育數據中的祕密**

*Dr. HO Kwok Wah*  
*Department of Statistics*  
*The Chinese University of Hong Kong*

Analyzing sports data can be a fun and enlightening way for sports fans to have even more enjoyment of the games they love. By applying various statistical techniques, we can uncover hidden patterns and factors that lead to a better understanding of player and team characteristics and performance. Through discussing a few interesting studies on data about basketball, swimming, and tennis competitions, I aim to demonstrate how accessible and rewarding sports data analysis can be. Hopefully, this talk can arouse the interest of students in statistics and its applications in the sports domain.

Presentation Mode:	Face to Face
Language of Talk:	Cantonese
Suitable Level:	S.5 or above
Talk Duration:	30 - 45 minutes
Audience Size:	20 - 50
Speaker Availability:	October 2024 – November 2024 (Thursday and Friday only) January 2025 – July 2025 (Monday and Thursday only)
Equipment:	PowerPoint projector, microphone

---

Dr. HO Kwok Wah (何國華) holds B.B.A., B.Sc., M.Phil. and Ph.D. degrees from The Hong Kong University of Science and Technology. Dr. Ho is currently a Lecturer in the Department of Statistics at The Chinese University of Hong Kong. His research interests cover MCMC algorithms, Bayesian statistics, financial time series and credit risk models.

**You May Also Like ... (this talk) -  
How Can Recommender Systems Read Your Mind?**  
你或許還會喜歡 ... (這講座) - 推薦系統如何猜出你的心思?

*Professor SIT Tony  
Department of Statistics  
The Chinese University of Hong Kong*

How does YouTube know what video you might want to watch next? How does Amazon pick a book title for you? Do you feel sometimes that these e-commerce platforms know you better than anyone else? Is it magic? In fact, machine-learning-based recommendation models are oftentimes developed to determine how similar individual items are to other things you like and then serve up specific recommendations. In this talk, we shall discuss different paradigms of recommender systems. We shall also investigate further how they work, describe their theoretical foundation, and discuss their strengths and weaknesses.

Presentation Mode:	Face to Face / Online
Language of Talk:	English
Suitable Level:	S.4 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	April – May 2025 (Afternoon only)
Equipment:	PowerPoint projector, microphone

---

Professor SIT Tony is an Associate Professor in the Department of Statistics, The Chinese University of Hong Kong. His research interests include censored quantile regression, stochastic processes, and statistical finance. Recently, he is also interested in network modelling and climate risk management.

## How to win at Monopoly

### 富翁攻略

*Dr. WRIGHT John Alexander  
Department of Statistics  
The Chinese University of Hong Kong*

Depending on how you play it, Monopoly can be a pleasant way to while away the hours with friends or a lesson in cut-throat capitalism as you force your opponents into bankruptcy. Either way, a beautiful mathematical object called a Markov Chain can help you win. In this talk, we will see how these chains appear in countless areas of daily life, from search engines to soccer, from finance to board games and how Statistics can help us use them to our advantage.

大富翁是一個老少咸宜的遊戲，你既可以享受與友同樂的悠閒輕鬆，亦可以體會把對手催逼至破產的緊張刺激。無論那種方式，美麗的馬科夫鏈可以幫助你輕鬆贏得遊戲。在這次講座中，我們將了解到這些鏈是如何存在於日常生活中，從搜索引擎到足球、從金融到棋牌遊戲……以及統計數據如何幫助我們利用馬科夫鏈來發揮優勢。

Presentation Mode:	Face to Face / Online
Language of Talk:	English
Suitable Level:	S.1 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	October 2024 - July 2025
Equipment:	PowerPoint projector, microphone

---

Dr. John Alexander WRIGHT (衛約翰) is a Senior Lecturer in the Department of Statistics, The Chinese University of Hong Kong. He received his B.A. in Mathematical Sciences from The University of Oxford, his M.A.St. from The University of Cambridge and his Ph.D. in Mathematics from The University of Hong Kong. His research interests lie in applied probability, especially financial mathematics. With nearly a decade of teaching under his belt, as well as several public outreach events for STEM subjects, he is an experienced educator who is keen to promote statistics to a wider audience.

## Are You Rational?

### 理智與方程

*Dr. WRIGHT John Alexander*  
*Department of Statistics*  
*The Chinese University of Hong Kong*

Can we model how people make every-day decisions? Well, we have been trying since the 1700s and the research continues today. In this interactive lecture, we will test the rationality of your decision making and see how the surprising results matter to technologies like AI and Machine Learning.

人類能模擬日常生活的決策嗎？用數學來模擬人們如何做出理性決策的研究最早可追溯到1700年，時到今天人們仍然繼續這項研究。在這個互動講座中，我們將看到這些想法如何應用於科技中，例如人工智能和機器學習。在講座的尾聲，你會知道你在做抉擇時的理性程度。

Presentation Mode:	Face to Face / Online
Language of Talk:	English
Suitable Level:	S.1 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	October 2024 - July 2025
Equipment:	PowerPoint projector, microphone

---

Dr. John Alexander WRIGHT (衛約翰) is a Senior Lecturer in the Department of Statistics, The Chinese University of Hong Kong. He received his B.A. in Mathematical Sciences from The University of Oxford, his M.A.St. from The University of Cambridge and his Ph.D. in Mathematics from The University of Hong Kong. His research interests lie in applied probability, especially financial mathematics. With nearly a decade of teaching under his belt, as well as several public outreach events for STEM subjects, he is an experienced educator who is keen to promote statistics to a wider audience.

## How to Find Your Mr/Mrs Right 眾裏尋他/她千百度

*Dr. WRIGHT John Alexander  
Department of Statistics  
The Chinese University of Hong Kong*

Your perfect match is out there somewhere – how to find them? As ever, maths and statistics hold the key. In this interactive talk, we will discover how machine learning, Nobel prize winners and secretaries can improve Cupid’s aim. We guarantee you will leave with a better chance of finding “The One”!

你的最佳伴侶就在世界的某個角落—如何找到他們呢？一如既往，數學和統計學掌握着問題的關鍵。在這個互動演講中，我們會探索機器學習、諾貝爾獎獲得者以及秘書是怎樣提高愛神之箭的命中率。我們保證，在你離開的時候會更有把握尋找到那個獨一無二的人！

Presentation Mode:	Face to Face / Online
Language of Talk:	English
Suitable Level:	S.1 or above
Talk Duration:	45 minutes
Audience Size:	20 or above
Speaker Availability:	October 2024 - July 2025
Equipment:	PowerPoint projector, microphone

---

Dr. John Alexander WRIGHT (衛約翰) is a Senior Lecturer in the Department of Statistics, The Chinese University of Hong Kong. He received his B.A. in Mathematical Sciences from The University of Oxford, his M.A.St. from The University of Cambridge and his Ph.D. in Mathematics from The University of Hong Kong. His research interests lie in applied probability, especially financial mathematics. With nearly a decade of teaching under his belt, as well as several public outreach events for STEM subjects, he is an experienced educator who is keen to promote statistics to a wider audience.