香港中文大學理學院
FACULTY OF SCIENCE
THE CHINESE UNIVERSITY OF HONG KONG

CUHKScience | CUHKScienceFaculty

ZOOM INTO SCIENCE 2022
Lecture Series

科學無處不在！香港中文大學理學院將於2022年3至4月舉辦「**ZOOM Into Science**」網上講座，帶你從不同角度探索科學世界。

四十五分鐘的講座將透過 Zoom Webinar 網上直播，另設問答環節，歡迎各位同學、老師及家長參加。

Science is everywhere! The Faculty of Science of CUHK invites you to **"ZOOM into Science"** with us in March and April 2022 to discover more about the exciting world of science.

The 45-minute online talks will be broadcasted online via Zoom Webinar. The tailor-made talks will be followed by Q&A session. Students, teachers, and parents are welcome to join.

免費講座 Free Lectures
網上報名 Online Registration
www.sci.cuhk.edu.hk/zoomlectures/2022

逢星期三及五 Every Wed & Fri
4:30 pm - 5:30 pm
廣東話主講 In Cantonese

25/3 FRI
香薰油在手工護膚品中的應用
Application of Essential Oil for Hand-Made Skin Care Products
盧翠雯 博士 化學系 — Dr. LO Chui Man, Department of Chemistry

30/3 WED
坐定定地質遊 (VR)
A Virtual Reality (VR) Geo-tour
譚佩玉 博士 地球系統科學課程 — Dr. Tammy TAM, Earth System Science Programme

1/4 FRI
數學幾何的工業應用
Industrial Applications of Geometry
雷樂銘 教授 數學系 — Prof. Ronald LUI, Department of Mathematics

6/4 WED
尋找暗物質之旅
The Quest for Dark Matter
吳震宇 教授 物理系 — Prof. NG Chun Yu, Department of Physics

8/4 FRI
金融和運動的隨機性
Randomness in Finance and Sports
李伯權 博士 統計學系 — Dr. Philip LEE, Department of Statistics

13/4 WED
從了解簡單的藻類蛋白到複雜的腦科學：光遺傳學背後的故事
From Understanding Simple Algae Protein to Complex Brain Science: The Story behind Optogenetics
周熙文 教授 生命科學學院 — Prof. Kim CHOW, School of Life Sciences

3943 1387 | cpse@cuhk.edu.hk | www.sci.cuhk.edu.hk/zoomlectures/2022

ZOOM INTO SCIENCE 2022

逢星期三及五 Every Wed & Fri 4:30 pm - 5:30 pm

廣東話主講 In Cantonese

3943 1387 cpse@cuhk.edu.hk

報名 Registration

www.sci.cuhk.edu.hk/zoomlectures/2022

25/3 FRI 香薰油在手工護膚品中的應用

Application of Essential Oil for Hand-Made Skin Care Products

盧翠雯 博士 化學系

Dr. LO Chui Man Department of Chemistry

香薰油是從植物提取的芳香揮發油，它能用於芳香療法、化妝品、家居用品和驅蚊劑等。由於包含不同成分，每種香薰油都有不同功能。例如，茶樹油可治療痤瘡、皮膚真菌和昆蟲叮咬，薄荷油可治療普通感冒、流感等呼吸道不適症狀，檸檬草油可緩解壓力、焦慮和抑鬱，香茅油可用作驅蚊劑。本次研討會將介紹從植物中提取香薰油的方法及示範製作護膚品的簡單實驗程序，您也可以嘗試在家裡自己動手製作。

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 seminar, 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.

30/3 WED 坐定定地質遊 (VR)

A Virtual Reality (VR) Geo-tour

譚佩玉 博士 地球系統科學課程

Dr. Tammy TAM Earth System Science Programme

由於疫情影響不少教育機構，已將傳統的地質野外考察轉變成新的學習模式。為了持續的地質知識訓練和普及科學教育，香港中文大學地球系統科學課程建立了一系列的 「虛擬地質遊 (VR Geo-tours)」，將本地出名的地質特徵展示於程式內。這次演講將會分享，學生及公眾如何利用這些平台自我準備地質考察。更重要的是，這個演講會分享，地質學家如何運用各學科的知識，例如地理、物理和化學，作地質野外考察。

Under the impact of COVID-19, several educational institutes have transformed traditional geologic field studies into a new learning model. To maintain the geologic training and promote geoscience under the "new norm", the Earth System Science Programme, CUHK has incorporated local famous geologic features into Virtual Reality (VR) geologic tours (geo-tours). This talk will share some of the recent VR geo-tours developed and how students and the general public use these platforms for preparing a geologic field study. More importantly, the talk will demonstrate the way geologists apply interdisciplinary knowledge such as geography, physics, and chemistry in a geologic study.

1/4 FRI 數學幾何的工業應用

Industrial Applications of Geometry

雷樂銘 教授 數學系

Prof. Ronald LUI Department of Mathematics

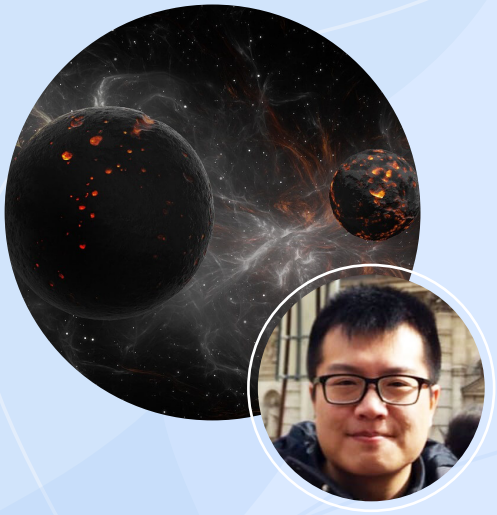
幾何是數學中的一個重要課題。它最近引起了廣泛關注，並在各個領域獲得了成功的應用，其中包括醫學圖像分析、計算機圖形學和視覺。例如，在醫學領域，神經科學家經常需要定位健康和不健康大腦結構之間的結構差異，從而檢測出大腦病變的系統模式。數學中的幾何學能夠準確定位形狀異常，系統分析複雜的解剖結構並進行疾病分析。數學家可以使用它開發疾病診斷工具，例如用於阿爾茨海默病的診斷。在本次演講中，我將概述計算幾何及其工業應用的最新進展。

Geometry is an important topic in mathematics. It has recently attracted much attention and found successful applications in various fields. Applications have been found in medical image analysis, computer graphics and visions. For instance, in medical field, neuroscientists often need to locate structural differences between healthy and unhealthy brain structures and hence to detect systematic patterns of alterations in brain diseases. Geometry is able to accurately locate shape abnormality and systematically analyze the complicated anatomical structure for disease analysis. Using it, tools for disease diagnosis, such as Alzheimer's disease, can be developed. In this talk, I will give an overview on the recent advances of computational geometry and its industrial applications.

ZOOM INTO SCIENCE 2022

逢星期三及五 Every Wed & Fri 4:30 pm - 5:30 pm
廣東話主講 In Cantonese

3943 1387 cpse@cuhk.edu.hk
報名 Registration
www.sci.cuhk.edu.hk/zoomlectures/2022



6/4 WED 尋找暗物質之旅
The Quest for Dark Matter

吳震宇 教授
物理系

Prof. NG Chun Yu
Department of Physics

暗物質之謎是現今物理學最重要的難題之一，並已困擾物理界超過半世紀。在這裏，我將回顧暗物質「發現」 的經過、探討理解物暗質對我們理解宇宙運作和基本粒子物理學的重要性、和介紹現今暗物質研究的前沿方向。

The dark matter puzzle is one of the most important problems in modern science, and despite more than 50 years of intensive research, there are still no solid clue to the identity of dark matter. I will discuss how dark matter was "discovered", how understanding dark matter is crucial to our understanding of the Universe and fundamental physics, and how are scientists currently try to identify dark matter.

8/4 FRI 金融和運動的隨機性
Randomness in Finance and Sports

李伯權 博士
統計學系

Dr. Philip LEE
Department of Statistics

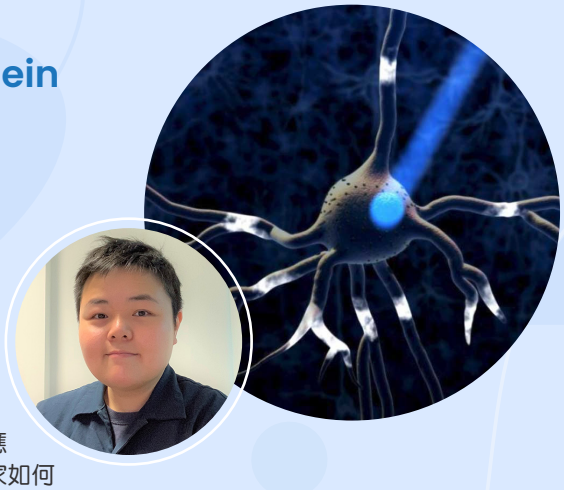
理解隨機性是基本概率和統計理論的關鍵組成部分。然而，現實生活中的隨機性遠比理論假設的要複雜得多。在本次演講中，我們將討論金融和運動中隨機性的屬性，並引入各種統計模型來捕捉這些屬性。

Understanding randomness is a key component in elementary probability and statistical theories. However, randomness in real life are far more complicated than the theories are assumed. In this talk, we will discuss the properties of randomness in finance and sports, and introduce various statistical models to capture those properties.

13/4 WED 從了解簡單的藻類蛋白到複雜的腦科學：光遺傳學背後的故事
From Understanding Simple Algae Protein to Complex Brain Science: The Story behind Optogenetics

周熙文 教授
生命科學學院

Prof. Kim CHOW
School of Life Sciences



光遺傳學是一種允許大腦神經元活性被光激活或抑制的技術。這項技術源於對來自藻類細胞蛋白的理解，這些蛋白能對光產生反應，促進離子進出細胞。當編碼這些蛋白的基因被插入神經元時，後者便能以相同的方式對光作出反應。因此，科學家便可利用激光照準這些神經元，控制它們的活性。目前，光遺傳學主要應用於了解大腦運作、腦疾病治療，以及動物行為學等研究。我將介紹這項技術的歷史、腦神經學研究應用，以及作為恢復視力治療方法的潛力。這項技術可作為一個良好的示例，展示科學家如何從簡單生物體中學習基礎生物學，啟發及實踐生物醫學和疾病治療的進步。

Optogenetics is a technique that allows brain neurons to be activated or inactivated with light. This technique roots from the understanding of cell proteins from algae, which respond to light and transport ions into and out of the cells. When the genes encoding these proteins are inserted into neurons, they allow them to respond to light in the same way. With laser directed at these neurons, scientists could either activate or switch off their activities. Optogenetics has been used to study how the brain works, and how neurons might be controlled to treat disease, and even an animal's behaviour. I will introduce the history of this technique, its applications for understanding higher order brain functions, and potentials as treatment to restore sight. This technique shall serve as an excellent example showcasing how understanding of fundamental biology from simple organisms could lead to advancements in biomedical science and disease treatment.