Department of Physics
The Chinese University of Hong Kong

Symposium
in Honour of the 95th Birthday of
Professor Yang Chen Ning

Friday, 29 September 2017

Time : 3:30 pm to 6:10 pm
(Tea Reception starts at 3:30 pm)

Venue : LT1, Lady Shaw Building, The Chinese University of Hong Kong, Shatin, New Territories

Programme:

Time	Speaker	Title
4:00 pm – 4:05 pm	Junyi Zhu	Introduction
4:05 pm – 4:15 pm	Professor C N Yang	Speech
4:15 pm – 4:40 pm	Ming-chung Chu	Neutrinos - the Ghost Particles that Shape the Universe
4:40 pm – 5:05 pm	Tjonnie Guang Feng Li	Status and Prospects for Gravitational-Wave Astrophysics
5:05 pm – 5:30 pm	Sen Yang	A Diamond Road toward Scalable Quantum Information Networks
5:30 pm – 6:00 pm	Renbao Liu	Revisiting the Lee-Yang Zeros after 65 Years of Its Discovery by C N Yang
6:00 pm – 6:05 pm	Presentation of souvenirs to symposium speakers	
6:00 pm – 6:05 pm	Photo Session	

Enquiries: 3943 6339

Abstracts

Lecture 1: Neutrinos - the Ghost Particles that Shape the Universe

Ming-chung Chu, The Chinese University of Hong Kong

In the sixty years since Lee and Yang's seminal work on parity violation in weak interaction, the neutrino sector continues to be full of surprises and mysteries. Produced abundantly in the Big Bang and in stars, neutrinos also play important roles in several astrophysical and cosmological processes, including supernova explosion and cosmological structure evolution. The next generation of neutrino experiments may shed light on why matter dominates anti-matter in the universe, an important condition for our existence. I will give an overview of these developments in neutrino physics, astrophysics, and cosmology.

Speaker biography: Professor Ming-chung Chu obtained his B.Sc. and PhD degrees both at California Institute of Technology (Caltech). He held research positions at MIT and Caltech before joining the Chinese University of Hong Kong in 1995. His current research interest includes astrophysics, cosmology, and particle physics. He was a co-founder of the Daya Bay Reactor Neutrino Experiment in 2003, which led to the discovery of a new mode of neutrino oscillations.

Lecture 2: Status and Prospects for Gravitational-Wave Astrophysics

Tjonnie Guang Feng Li, The Chinese University of Hong Kong

The detection of gravitational waves from pairs of black holes has opened up the possibility to observe the Universe in ways not possible before. I will review some of the existing results and discuss several exciting opportunities for gravitational-wave astrophysics.

Speaker biography: Professor Tjonnie Li received his BA and MSc in Natural Sciences from the University of Cambridge (2009), and PhD in Physics from the Dutch National Institute for Subatomic Physics (Nikhef)/VU University Amsterdam (2013). Prior to joining The Chinese University of Hong Kong in 2015, he spent 2 years at Caltech as a Rubicon Postdoctoral Fellow. His research interest is in gravitational-wave physics. He is part of the LIGO projects which made the momentous discovery of gravitational waves. His awards include the 2013 Stefano Braccini Prize, 2016 Gruber Cosmology Prize and the 2016 Special Breakthrough Prize in Fundamental Physics.

Lecture 3: A Diamond Road toward Scalable Quantum Information Networks

Sen Yang, The Chinese University of Hong Kong

Because of their great potential as the most secure communication system and their promising scalability in quantum computing, quantum information networks emerged and have been an important field in physics research in recent 15 years. Building practical quantum network calls for long coherence time and feasibly scale-up physical systems. In recent 10 years, point defects with individual controllable spins come into the focus due to their scalability, ability of interacting with photons, and long coherence times. One most promising system is nitrogen vacancy centers in diamond. In this talk, we will start by introducing the hybrid quantum nodes composed of an electron spin and several nuclear spins around, the ways to operate them and their coherence properties. We will discuss how to build the practical quantum information networks based on coherent absorption.

Speaker biography: Professor Sen Yang graduated from the Fundamental Science Program, a program founded by Prof. CN Yang in Tsinghua University. He obtained his PhD in University of California, San Diego. During that time, he studied the Bose Einstein Condensation of excitons in coupled quantum wells. Thereafter, he joined University of Stuttgart as a postdoctoral researcher working on quantum optics – single qubit in solids. Professor Yang joined CUHK – Physics in 2016. His current research focuses on quantum information system based on solid state qubits.

Lecture 4: Revisiting the Lee-Yang Zeros after 65 Years of Its Discovery by CN Yang

Renbao Liu, The Chinese University of Hong Kong

In 1952, C. N. Yang and T. D. Lee discovered the unit circle theorem, which states that the zeros of the partition functions of a ferromagnetic Ising spin system are all located on the unit circle in the complex plane of fugacity. Later the zeros of partition functions are named Lee-Yang zeros. In recent years, the Lee-Yang zeros are re-visited in different areas of physics, such as decay of quantum coherence, statistics of quantum fluctuations, and quantum phase transitions in non-Hermitian systems. In this talk, in celebration of the 95th birthday of Professor CN Yang, I will give a brief review on these recent developments and discuss some possible extensions.

Speaker biography: Professor Renbao Liu obtained his BSc from Nanjing University in 1995 and his PhD from Chinese Academy of Sciences in 2000. Between 2000 and 2002, he joined Tsinghua University as a postdoctoral fellow in the Center for Advanced Study (now Institute of Advanced Study), which was founded by CN Yang. Professor Liu continued his postdoctoral research in the University of California - San Diego till 2005 before he joined CUHK Physics. His research Interests are mainly on quantum information, quantum sensing, quantum physics, and quantum optics.