# Opening a Door in Elementary Particle Physics - the Daya Bay Reactor Neutrino Experiment

Professor CHU Ming-chung
Dept. of Physics, The Chinese University of Hong Kong

## Abstract

One of the most dramatic breakthroughs in physics recently is the discovery that neutrinos have mass, through the discovery of neutrino oscillation - a neutrino travelling in space transforms from one type to another. The fact that neutrinos are massive and oscillate has profound implications in particle physics, cosmology and astrophysics; it opens the door to physics beyond the Standard Model of Particle Physics, and it may hold the key to explaining why matter dominates anti-matter in the universe, a key condition for our existence. However, the value of a key parameter to describe neutrino oscillation, q13, remains unknown. The best approach for determining q13 is to measure the flux of antineutrinos from nuclear reactors at different locations, with the detectors installed underground to suppress the cosmogenic background. An international team of physicists has decided to mount such an experiment at the Daya Bay Nuclear Power Plant, and a group of local scientists has been actively involved from the very beginning. This project will help us to establish Hong Kong as a regional centre in fundamental physics research and build long-term collaboration with leading research institutes worldwide.

## Biography of Speaker

Chu Ming-chung obtained his BSc and PhD in Physics in 1983 and 1987 respectively, both from Caltech. In recent years, his research interest is in the areas of Astrophysics, Cosmology, and Particle Physics.