A Proposal for Quantum Gravity and Quantum Mechanics of Black Hole

by

Professor Chong-Sun CHU (朱創新教授)
Department of Physics
National Tsing Hua University, Taiwan

Date: July 11, 2024 (Thursday)
Time: 3:30 – 4:15 p.m.
Place: L2, Science Centre, CUHK

ALL INTERESTED ARE WELCOME
****

Abstract

We propose a quantum mechanical theory of quantum spaces described by large N noncommutative geometry as a model for quantum gravity. The theory admits fuzzy sphere and fuzzy ellipsoid as solutions. We show that these solutions reproduce precisely the horizon radius of a Schwarzschild black hole and a Kerr black hole. Moreover, our quantum mechanical description gives rise to a set of microstates over these geometries, which reproduces precisely the Bekenstein-Hawking entropy of black holes. These results provide strong support that our proposed theory of quantum spaces is a plausible candidate for the theory of quantum gravity.

The seminar is based on the following papers: 2406.01466, 2406.12704.

Enquiries: 3943 6303