

CQSE Special Seminar

2019

Aug. 1, Thursday

TIME Aug. 1, 2019, 11:00am
TITLE Quantum Computation: selected discussions on the frameworks, algorithms and characterization
SPEAKER Prof. Tzu-Chieh Wei
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PLACE Rm716, CCMS & New Physics Building, NTU

Abstract

Quantum computation (QC) is a novel way of information processing that allows, for certain classes of problems, exponential speedup over classical computation. Various frameworks of quantum computation exist, such as the circuit, adiabatic, and measurement-based models, but operate very differently and may suit different physical realizations. I will discuss some of these frameworks and a few selected results, such as universal resource using AKLT states in measurement-based QC (and the gap issue of 2D AKLT Hamiltonians) and algorithms for eigenstate projection that can be used to simulate quantum annealing and adiabatic quantum computation. I will also discuss tomographic tools in characterizing states, process and measurement, emphasizing the so-called detector tomography, and present some results obtained from runs on IBM Q Experience. I will illustrate how the characterization of detection allows us to mitigate imperfection detection.

