CeNT CENTRE OF NEW TECHNOLOGIES

UNIVERSITY OF WARSAW

invites to a seminar by

Prof. Yoshihisa Yamamoto

ImPACT Program, Japan Science and Technology Agency
E. L. Ginzton Laboratory, Stanford University

Physics of quantum-to-classical crossover and coherent Ising machines

5th July 2018 at 12 p.m.

Venue: Centre of New Technologies, Banacha 2C,
Lecture Hall 0142 (Ground floor)

Host: Konrad Banaszek

In this talk, we will discuss the three quantum computation models, unitary quantum computation (UQC), adiabatic quantum computation (AQC) and dissipative quantum computation (DQC). The UQC is expected to solve efficiently problems with hidden periodicity such as factoring and discrete logarithm, while the AQC and DQC are expected to solve efficiently problems without any hidden period nor specific structure, such as combinatorial optimization problems. A coherent Ising machine (CIM) is a novel computing architecture based on the network of degenerate optical parametric oscillators and implements the DQC model. The developed CIM has 2048 spins with all-to-all connections and is now available as a cloud sytem via internet. We will present the basic concept, operational principle, and benchmark study against modern algorithms of the CIM.