

Solving large optimization problems on quantum annealing computers

The quantum annealers (QA) are designed to find high-quality solutions to discrete optimization problems. Thanks to this specialization, such computers currently have a much larger number of qubits than existing universal computers and are easier to program and use. However, most practical problems are too large to fit the QA's quantum processor and hence cannot be solved directly on QA. In this talk, I will describe decomposition methods for solving such large problems, where the input problem is divided into a number of smaller subproblems each of size small enough to be solved directly on the QA. The solutions of the subproblems are then combined into a solution of the original problem. I will apply this method specifically to the Maximum Clique problem.