

Using quantum annealers for solving optimization problems: introduction

Quantum annealers (QA) such as the commercially available D-Wave systems use quantum effects to help find more efficiently solutions to discrete optimization problems that are hard to solve on classical computers. Unlike the better-known universal quantum computers, quantum annealers are focused on a class of quadratic optimization problems that include all NP-hard problems, such as the Maximum Clique, Graph Coloring, and Traveling Salesman problems. In this talk, I will make a brief introduction to the general area of quantum computing and then will discuss in more detail the function of the QA and how they can be used to solve optimization problems. I will use simple examples to illustrate the methods and ideas.