Tuesday, October 26th, 2:30 pm

Speaker: Randy Lewis

Institution: York University

Title: Using quantum computers to study quarks and gluons

Abstract: The strong force among the quarks and gluons inside hadrons cannot be handled with perturbation theory, so physicists use a supercomputer method called lattice gauge theory. It is a rigorous first-principles approach that provides precise and accurate results for many aspects of hadron physics, but it does leave some questions unanswered. Now that quantum computers exist, researchers are exploring whether lattice gauge theory can be adapted to run on quantum computers in a way that provides the answers that are not attainable from classical supercomputers. Some of the approaches will be discussed, including numerical results from small calculations on today's quantum computers.