

# The SUMO Speaker Series for Undergraduates

*(Pizza Provided)*

Wednesday, February 23<sup>rd</sup>

**4:15-5:05, room 380C**

## The Quantum Advantage

Professor Mark Lucianovic



### ABSTRACT:

The field of quantum computing dates back to the early 1980's, when Richard Feynman remarked that computers based on quantum mechanical principles might be able to solve certain physics problems more efficiently than traditional digital computers. Others, including D. Deutsch, later worked to formalize the idea of a hypothetical computer based on "qubits," or quantum bits, that obeyed the strange logic of quantum mechanics. But the field suddenly gained the world's attention when Peter Shor proved in 1994 that the problem of factoring a large integer could be solved far more efficiently with a quantum computer than with any known algorithm for a "classical" computer. (Is e-commerce still safe? Answer: for now.)

In this talk, no knowledge of quantum mechanics or number theory is assumed; we'll set out the rules for quantum computing and logic, and how certain feats that classically seem impossible (or very hard) are rather easily accomplished using quantum principles.

[sumo.stanford.edu/speakers](http://sumo.stanford.edu/speakers)