

QUANTUM ALGORITHMS FOR NUMERICAL INTEGRATION

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(TWO SEMESTER PROJECT)

1. Introduction. At the precipice of computation sits a golden fleece of the modern era. Quantum Computation is a buzz word in academia, and industry alike. Those who misunderstand this theoretical machine herald it as an end-all that will solve all the modern problems in complexity theory. Those who understand it's power are able to approach it rationally, and determine which problems it can solve with increased efficiency compared with it's modern Turing alternative. At the end of the day there are some problems for which the doped silicon of electronic computers simply outperforms the polarized glass of their quantum companions. it is up to those with a theoretical understanding of the mathematical, and physical properties of the proposed machine to determine where beneficiary algorithms might overlap and allow for substantial speed up using this new paradigm of Quantum Computation.

2. Problem Description. The heart of this project lies with the desire to understand whether or not certain methods from traditional numerical analysis can experience a theoretical (and experimental by use of a quantum simulator)

3. Solution Approach.

4. Personnel.

REFERENCES