Literature Review Outline

- Introduction

- Ab Initio Many Body Quantum Mechanics

  1. Hartree Fock

  2. Electronic Correlation
     - Many body perturbation theory
     - Configuration interaction theory
     - Coupled cluster theory

  3. Explicitly Correlated Methods
     - Motivation
     - Explicitly correlated many body perturbation theory
     - Explicitly correlated couple cluster methods

- Tensor Algebra Methods to reduce Computational Complexity in Quantum Chemistry

  1. Tensor Ansätze to Schrödinger like Equations
     - Motivation for these kinds of methods (MPS, TNS, TTNS, DMRG etc) How this section is different than the one to follow

  2. Tensor Reduction methods in a Canonical Quantum Chemistry Framework
     - Density fitting/resolution of the identity
     - Pair natural orbitals/pair atomic orbitals
     - Tensor decomposition methods
       * Tensor hypercontraction
       * Cholesky decomposition
       * Canonical product
       * Tucker decomposition

- Research Plan