

MAR15-2014-020376

Abstract for an Invited Paper
for the MAR15 Meeting of
the American Physical Society

The computational complexity of many-electron problems and Density Functional Theory

NORBERT SCHUCH, RWTH Aachen University

Quantum computation and complexity has helped us to sharpen our understanding of the common origin for the difficulty of a wide range of problems in quantum many-body physics. In my talk, I will discuss the implications of quantum complexity theory to understanding systems of interacting electrons, and show how it allows us to determine the fundamental limitations to any numerical method for the simulation of those systems, including our ability to approximate the universal functional in Density Functional Theory.