Ibraheem Faisal Al-Yousef

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GitHub LinkedIn

EDUCATION

B.S. in Physics, KFUPM, expected to graduate in Spring 2022.

RESEARCH EXPERIENCE

Condensed Matter Theory Working on analytical Jordan-Wigner solutions in condensed matter theory. Specifically, using Jordan-Wigner transformation to exactly solve models related to Kitaev honeycomb model. Under the supervision of Dr. Michael Vogl, KFUPM, Aug 2022-present.

Alternative Formulation of Quantum Mechanics (Background) Working with Prof. Bahlouli and Prof. Alhaidari in projects related to the formulation of quantum mechanics based on orthogonal polynomials, KFUPM, Feb 2022-present.

COMPUTATIONAL SKILLS & EXPERIENCE

Mathematica Done multiple numerical projects including quantum and classical physics using Mathematica. Mainly on symbolic calculations, derivations, and visualizations.

Python Used python in Computational Chemistry course, calculating atomic and molecular properties using a variety of quantum and classical methods including Hartree-Fock, Monte Carlo, and DFT.

LaTeX Have been using LaTeX to typeset all my academic reports and presentations. Samples

RELEVANT COURSES

Undergraduate Research (PHYS497) Second Quantization; Jordan-Wigner Transformation; Bogoliubov Transformation; Correlation Functions. [Fall]

Computational Chemistry (CHEM313) Hartree-Fock Theory; Density Functional Theory; Molecular Mechanics; Molecular Dynamics; Monte Carlo simulations. [Grade: A]

Computational Physics (PHYS373) Monte Carlo simulations; Simulation techniques; Programming methods; Comparison of ideal and realistic systems; Limitations of physical theory. [Spring]

WORK EXPERIENCE

Physics Grader Worked as a part-time job grader for PHYS102. This work experience has further enriched my knowledge in physics and exposed me to some common mistakes.

Physics Club's President Worked as the president of the physics club at KFUPM for a year. This experience has helped me to be a contributing team member and leader, especially in physics related areas.

REFERENCES

Prof. Hocine Bahlouli

Professor · Theoretical Condensed Matter ·Physics Department, KFUPM

Email: bahlouli@kfupm.edu.sa Phone: (966)013-860-2097

Prof. Bahlouli [Website, Scholar] is my instructor for three undergraduate courses: quantum mechanics I and II as well as classical mechanics.

Dr. Michael Vogl

Assistant Professor · Theoretical Condensed Matter ·Physics Department, KFUPM

Email: michael.vogl@kfupm.edu.sa Phone: (966)013-860-4056

Dr. Vogl [Website, Scholar, arXiv] is my undergraduate research supervisor.

Dr. Asem Alenizan

Assistant Professor · Computational Chemistry ·Chemistry Department, KFUPM

Email: aalenaizan@kfupm.edu.sa Phone: (966)013-860-7804

Dr. Alenizan [Website, Scholar] was my instructor for "Intro. to Computational Chemistry" course, in which I was on of the highest performing student.