

# Ibraheem F. AlYousef

Physics Graduate

[ibraheem@iPhysics.sa](mailto:ibraheem@iPhysics.sa) (966)05x-xxx-xxxx

[Website](#)

## EDUCATION

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- ⊗ **B.S. in Physics with honors**, King Fahd University of Petroleum and Minerals (KFUPM)

## PUBLICATIONS

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- ⊗ **Ibraheem F. Al-Yousef**, Moayad Ekhwan, H. Bahlouli, and A. D. Alhaidari, “Spectral Problem of the Hamiltonian in Quantum Mechanics without Reference to a Potential Function” *Axioms* **2023**, 12, 334 doi:[10.3390/axioms12040334](https://doi.org/10.3390/axioms12040334)

## RESEARCH EXPERIENCE

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- ⊗ **Condensed Matter Theory** Solving prototypical quantum spin Hamiltonians via Jordan-Wigner fermions, with a proposal of utilizing Jordan-Wigner fermions to exactly solve an extension of the Kitaev honeycomb model that includes second nearest neighbor interactions. [\[Research Proposal\]](#)

KFUPM, Aug 2022 - Jan 2023

- ⊗ **Mathematical Physics** Solving undergraduate-level problems in a new formulation of quantum mechanics without a reference to a potential function, by utilizing orthogonal energy polynomials. [\[Published\]](#)

KFUPM, Feb 2022 - Mar 2023

- ⊗ **Thin Films** Fabrication and optical characterization of Titanium-doped Indium-Tin-Oxide thin films for UV protection applications, as part of the undergraduate student research grant UXPLORE. [\[Final Report\]](#)

IRC-REPS KFUPM, Feb 2023 - Jun 2023

## COMPUTATIONAL SKILLS

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- ⊗ **Mathematica** Expert in both symbolic and numerical calculations. [\[Samples\]](#)
- ⊗ **Python** Competent for computational physics and chemistry usages. [\[Samples\]](#)
- ⊗ **L<sup>A</sup>T<sub>E</sub>X** Proficient in L<sup>A</sup>T<sub>E</sub>X for articles and presentations. [\[Samples\]](#)

## VOLUNTEERING

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- ⊗ **President of The Physics Club** Guiding the physics club towards organizing engaging guest lectures, interactive activities, and competitions to enhance members' knowledge and passion for physics.

KFUPM, Aug 2022 - Aug 2023

- ⊗ **Event Coordinator and Resident Administrator** Selected to be part of Mawhiba's academic program at KFUPM for a month. Supervising 24 young gifted students and conducting various entertaining activities.

Mawhiba, Jul 2023 - Aug 2023

- ⊗ **Committee Member** Selected to be serving on the Islamic Affairs Committee at KFUPM.

KFUPM, Oct 2022 - Aug 2023

## WORK EXPERIENCE

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- ⊗ **Medical Physicist** Trained in nuclear medicine and medical imaging sections, performing quality control tasks.

King Fahad Specialist Hospital in Dammam, Jun 2022 - Aug 2022

- ⊗ **Physics Grader** Worked as a part-time job grader for Freshman physics course, grading quizzes and homeworks.

KFUPM, Feb 2022 - Jun 2022

## SELECTED UNDERGRADUATE COURSES

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- ⊗ **Nuclear and Particle Physics** Nuclear models; Radioactive decays and models; Nuclear reactions.
- ⊗ **Physics of Semiconductor Devices** Energy band diagrams; LEDs; MOSFET and JFET; Solar-cells.
- ⊗ **Computational Physics** Monte Carlo; Modelling physical systems; Limitations of numerical methods.
- ⊗ **Computational Chemistry** Hartree-Fock; Molecular Dynamics; Monte Carlo simulations; DFT.

## SHORT COURSES

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‡ Principles of Project Management KFUPM, Jun 2023	‡ Business for Science and Engineering KFUPM, Feb 2023
‡ Introduction to Qiskit KFUPM, Apr 2023	‡ LabVIEW Programming KFUPM, Mar 2022
‡ Research Skills KFUPM, Mar 2023	‡ Data Analysis Using Python KFUPM, Oct 2021

## SKILLS

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⊙ Leadership	⊗ Teamwork	⊕ Presentation	⊙ Research
⊙ Competitiveness	⊗ Teaching	⊕ Time Management	⊙ Problem Solving

## REFERENCES

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Available upon request.