

Jacob Peter Kia Ngaha

POSTDOCTORAL RESEARCH FELLOW

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Education

PhD. in Physics

The University of Auckland

AUCKLAND, NEW ZEALAND

Sep. 2019 - Present

Worked under Professor Howard Carmichael and Associate Professor Scott Parkins researching frequency filtering techniques in a quantum optics setting. We developed a theoretical model that allows an approximation of an ideal bandpass filter, allowing more accurate calculations of frequency-filtered photon correlations to be performed.

MSc. in Physics

The University of Auckland

AUCKLAND, NEW ZEALAND

Feb. 2018 - Mar. 2019

For a year I worked under Professor Howard Carmichael investigating the fluorescence spectrum and photon-correlations of a driven three-level atom. An entire year's worth of directed research was presented in a thesis as part of the degree's requirements.

BSc. (Hons) in Physics

The University of Auckland

AUCKLAND, NEW ZEALAND

Mar. 2017 - Nov. 2017

Worked under Professor Howard Carmichael exploring the effects of spontaneous emission, quantum dephasing and thermal photons on the generation of sub-Poissonian light.

BSc.

The University of Auckland

AUCKLAND, NEW ZEALAND

Mar. 2014 - Nov. 2016

Double major in Physics and Mathematics.

New Zealand Diplomas in Te Reo Māori (Rumaki) (Levels 5-6)

Te Wānanga o Aotearoa

AUCKLAND, NEW ZEALAND

2022 - 2023

These certificates were awarded after two separate years of full immersion learning of Te Reo Māori in the courses: *Te Rōnakitanga ki te Reo Kairangi* and *Te Aupikitanga ki te Reo Kairangi*.

New Zealand Certificates in Te Reo (Rumaki, Reo Rua) (Levels 1-4)

Te Wānanga o Aotearoa

AUCKLAND, NEW ZEALAND

Mar. 2020 - Nov. 2021

Two separate years learning Te Reo Māori through the *Te Ara Reo Māori* courses: *He Pī Ka Pao* and *He Pī Ka Rere*

Experience

Post-Doctoral Research Fellow

The University of Auckland

AUCKLAND, NEW ZEALAND

2023 - Present

In the Department of Mathematics I worked with Professors Bernd Krauskopf and Neil Broderick. I worked under the umbrella of “non-linear dynamics”, utilising numerical continuation to study the Yamada model of a self-pulsating laser with saturable absorber.

Outreach Assistant - Science Wānanga

The University of Otago

NEW ZEALAND

2018 - 2024

Science Wānanga is the University of Otago's Science outreach program aimed specifically at Māori youth, typically aged between 10 - 16. As part of this program, we stay on a marae with the children for two-three days, teaching and engaging them in different science fields. I specifically worked with the Physics team, where we ran several different workshops/demonstrations showing some properties of light and lasers.

Graduate Teaching Assistant

The University of Auckland

AUCKLAND, NEW ZEALAND

Jul. 2017 - Nov. 2022

- Marking tests and assignments as well as test invigilating for Physics 107 - Planets, Stars and Galaxies. (*Jul. 2017 - Nov. 2017*)
- Lab demonstrator for the Stage II and III laboratory students. This involves helping students with the experimental equipment and theory and marking reports and providing feedback. (*Feb. 2018 - Nov. 2022*)
- Tutor for the Physics Tuākana drop in tutorials for Māori and Pasifika students. I would help students from all stages of physics with concepts from their classes, their assignments, as well as test preparation. (*Jul. 2018 - Nov. 2022*)
- Student coordinator for the Physics Tuākana program. I would organise tutorial times, assist the main coordinator with administration tasks, and attend monthly Faculty meetings with other departments. (*July. 2020 - Nov. 2022*)
- Marker and tutor for postgraduate courses on quantum mechanics and quantum optics. (*Feb. 2022 - Nov. 2022*)

Volunteer Karate Instructor

Fushin Ryu Karate Association

AUCKLAND, NEW ZEALAND

2016 - 2023

I teach two - four classes a week to children from ages 6 to 16 as well as two classes of adults. I am responsible for teaching the students new techniques and abilities as well as strengthening current ones.

Senior Staff Supervisor & Wait Staff

Urban Gourmet

AUCKLAND, NEW ZEALAND

Mar. 2014 - Oct. 2018

- Held an alcohol manager's certificate from 2016-2019
- Many years experience in high pressure hospitality environments where I would be responsible for a large team of staff to deliver events at a high standard. These events ranged from private dinners at a client's home to large corporate dinners of up to 400 people.

Skills

TECHNICAL SKILLS

- Theoretical Physics
- Quantum Optics
- Computation Simulations of Physical Systems

COMPUTER LANGUAGES

- Fortran
- Python
- LaTeX
- MATLAB

SOFT SKILLS

- Leadership
- Decision making
- Time management
- Teaching

Committee Membership

Te Ao Māori Rōpū - Māori Development Group

The Dodd-Walls Centre

AUCKLAND, NEW ZEALAND

Dec. 2021 - Present

blah blah blah

Faculty of Science Research Fellow Society

The University of Auckland

AUCKLAND, NEW ZEALAND

Mar. 2024 - Present

blah blah blah

Awards

Frederick Douglas Brown Postgraduate Science Research Scholarship

The University of Auckland

Oct. 2021

University of Auckland Doctoral Scholarship

The University of Auckland

Sep. 2019

Dodd-Walls Centre Masters Scholarship

The Dodd-Walls Centre

Feb. 2018

Publications

Frequency-Filtered Photon Correlations

PHD. THESIS

ResearchSpace@Auckland

Jun. 2023

MSc. Two Photon Resonance Fluorescence in a Ladder System

THESIS

ResearchSpace@Auckland

Feb. 2019

References

Howard Carmichael

EMERITUS PROFESSOR OF PHYSICS

PhD. supervisor.

Universtiy of Auckland, New Zealand

h.carmichael@auckland.ac.nz

Scott Parkins

ASSOCIATE-PROFESSOR OF PHYSICS

PhD. supervisor.

Universtiy of Auckland, New Zealand

s.parkins@auckland.ac.nz