

27 September 2026

The Chair, Selection Committee
Lecturer / Senior Lecturer in Quantum or Optical Physics
School of Physics, Faculty of Science
The University of Melbourne

Re: Application for Lecturer (Level B) / Senior Lecturer (Level C) in Quantum or Optical Physics (JR-014024)

Dear Members of the Selection Committee,

I am writing to apply for a continuing appointment as Lecturer (Level B) in Quantum or Optical Physics in the School of Physics. I have also addressed the Level C criteria so that the panel can consider my application at either level. I am currently a Research Fellow and AEA Ignite Project Lead at Monash University, where my appointment spans the Department of Materials Science and Engineering and the School of Physics and Astronomy. I bring nine years of experience in the theoretical condensed matter physics of quantum materials, including seven years with the ARC Centre of Excellence in Future Low-Energy Electronic Technologies (FLEET).

My research asks how topology, Berry curvature and quantum geometry determine the electronic, magnetic, optical and transport responses of real materials, and how those responses can be engineered into low-energy quantum devices. Working closely with experimental physicists, I have shown that a giant Berry curvature survives complete structural disorder in amorphous Co_2MnGa , established the band-structure origin of giant ultraviolet circular dichroism in Heusler films, provided the theory for a room-temperature quantum metric effect in a kagome magnet, and led a five-year program on topological edge states in two-dimensional bismuth. I have published 43 refereed articles, including 15 in the past three years and six in journals with impact factors above 10. My work has attracted more than 1,200 citations, with an h-index of 19.

I am also taking this physics towards real devices. Since 2024, I have worked with academic and industry partners to secure more than A\$3.4 million in research funding. This includes a A\$650,000 AEA Ignite project that I conceived and lead, a A\$1.7 million ARC Linkage Project on a low-energy topological transistor as Key Participant, and A\$1.04 million in direct industry funding as Co-PI. I am lead inventor on a US patent application with TQ Transistors, and I have independently secured major national computing allocations through NCI and Pawsey.

At Melbourne, I would build a theory program in quantum geometry, magneto-optics and quantum device design that complements the School's strengths in condensed matter physics, optics and quantum technology. I see natural partnerships with the School's experimental condensed matter groups and its Centres of Excellence, particularly TMOS for light-matter response and CQC2T for device physics, and I would use AI-enabled computational workflows to shorten the path from prediction to measurement.

I would contribute fully to the School's education programs. I designed and delivered a university course in computational materials science, run DFT training for Master's and PhD students, and have mentored or co-supervised nine PhD candidates. I would welcome teaching quantum mechanics, condensed matter and computational physics, and I would develop a graduate subject in computational condensed matter physics that integrates AI tools while keeping physical reasoning at the centre of assessment.

Thank you for considering my application. I have enclosed my curriculum vitae and a response to the selection criteria, and I would welcome the opportunity to discuss how my research, teaching and partnerships could contribute to the School of Physics.

Yours sincerely,

Dr Yuefeng Yin

AEA Ignite Project Lead / Research Fellow
Monash University