

Curriculum Vitae

Albert Zhou

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Nationality: Australian

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Languages: English, German (C1), C++, Python

EDUCATION

- PhD in physics Oct 2018 – Mar 2022 (expected)
University: Karlsruhe Institut für Technologie
Topic: Neutrino-oscillation phenomenology
Advisor: Professor Thomas Schwetz-Mangold
- Bachelor of Science (Advanced Mathematics) (Honours) Mar 2014 – Nov 2017
University: University of Sydney
Majors: Physics and Maths
Final Result: Honours Class I and the University Medal (Mark: 92.0)
Honours Thesis: The electroweak phase transition in a Standard Model with hidden scale invariance
Honours Supervisor: Associate Professor Archil Kobakhidze
- North Sydney Boys' High School Feb 2008 – Nov 2013,
ATAR: 98.35 (achieved highest band in Maths and Latin)

PRIZES & AWARDS

- Awarded TH Laby Medal by the Australian Institute of Physics for Honours thesis 2021
- Awarded the Shiroki Prize by USyd for best Honours project in physics
- Awarded Yim Family Foundation Scholarship by Faculty of Science at USyd (25000 AUD) 2017
- Awarded the Norbert Quirk Prize for [Sydney University Mathematics Society Problems Competition](#) (also awarded best entry for problem 5) 2015
- Awarded the Norbert Quirk Prize for [Sydney University Mathematics Society Problems Competition](#) (also awarded best entry for problem 6) 2014

RESEARCH EXPERIENCE

- First year PhD: research project in theoretical cosmology Oct 2018 – Jul 2019
University: Karlsruhe Insitut für Technologie
Supervisor: Professor Frans Klinkhamer
Topic: The Cosmological Constant Problem and q -theory
- Summer Scholar at the Australian National University 20 Nov 2016 – 20 Jan 2017
Activity: Studied quantum integrable systems (1D Heisenberg spin chain, 2D lattice model of ice)

- Technical Assistant at NeuRA Mar 2016 – Nov 2016
Activity: Assisted in mathematical analysis of prophylaxis in haemophilia
- Summer Scholar at University of Sydney 20 Nov 2015 – 20 Feb 2016
Activity 1: Studied quantum field theory (scalar field theory and quantum electrodynamics)
Activity 2: Studied Coleman-Weinberg mechanism in context of scale-invariance
- Other small Bachelor projects 2014 – 2016
Second year: Presented a two-hour seminar on the Dirichlet problem in harmonic function theory as part of the Special Studies Program for Mathematics
First year: Undertook an undergraduate project in positron emission tomography (MATLAB).

PUBLICATIONS

- Berryman, J. M. et al., “Statistical significance of the sterile-neutrino hypothesis in the context of reactor and gallium data”; [[arXiv:2111.12530](https://arxiv.org/abs/2111.12530)]. Currently only preprint.
- Schwetz, T., **Zhou, A.** and Zhu, J.-Y.; “Constraining active-sterile neutrino transition magnetic moments at DUNE near and far detectors”; *JHEP*, 2021 (200) [[arXiv:2105.09699](https://arxiv.org/abs/2105.09699)]
- Esteban I. et al.; “The fate of hints: updated global analysis of three-flavor neutrino oscillations”; *JHEP*, **09**, 178 [[arXiv:2007.14792](https://arxiv.org/abs/2007.14792)]
- Klinkhamer, F. R. et al.; “Vacuum energy decay from a q-bubble”; *Physics*, **1**, 321-338.. [[arXiv:1901.05938](https://arxiv.org/abs/1901.05938)]
- Kobakhidze A. et al.; “Low-temperature electroweak phase transition in the Standard Model with hidden scale invariance”; *Phys. Lett. B* **776** pp.48–53 [[arXiv:1709.10322](https://arxiv.org/abs/1709.10322)]
- Herbert R. et al.; “Optimization of prophylaxis for hemophilia A”; *PLoS ONE* **13**(2): e0192783.

Talks

- Talk at GdR Neutrino Meeting 2020 (via Zoom because of COVID-19) <https://indico.in2p3.fr/event/22500/contributions/87768/>
- Short Talk at Invisibles Workshop 2021 (via Zoom because of COVID-19) <https://indico.cern.ch/event/911548/contributions/4341245/>

Other

- 2019, [Article](#) published on *New Matilda* about active labour market policy (jobs guarantee, in relation to *GetUp!*'s campaign)
- 2017, Acknowledged in preamble of *Quantum Field Theory for the Gifted Amateur* by Stephen Blundell and Tom Lancaster.

WORK

- Tutor for Moderne Theoretische Physik IIIb: Statistische Mechanik (KIT) 09 Apr 2021 – 23 Jul 2021
 Weekly tutorials: teaching and marking
 Attended two exams plus marking
 Third-year course
- Übungsleiter (tutorial head) for Moderne Theoretische Physik IIIa: Statistische Mechanik (KIT)
 Third-year course 10 Oct 2020 – 29 Mar 2021
 Organised tutorials for ~ 120 students and 6 tutors
 Wrote questions for fortnightly tutorials
 Held fortnightly tutorials: teaching and marking
 Helped write, manage and mark two exams
- Tutor for Neutrino Physics (KIT) 29 Oct 2019 – 04 Feb 2020
 Held tutorials for the masters-level course
 Wrote some question sheets
- Tutor at the School of Mathematics and Statistic in the University of Sydney First Semester of 2017
 Taught first-year course MATH1002 (Linear Algebra)
 Weekly tutorials
 Included two assignments and two quizzes (organisation and marking)

EXTRACURRICULAR ACTIVITIES

- Attended the thematic CERN School of Computing in Split, Croatia 10 – 16 Oct 2021
Topic: Scientific Software for Heterogeneous Architectures
 Focused on parallel and GPU programming
- Organised (in a team of three) the three-day [KSETA PhD Workshop](#) Sep 2021
 2 alumni speakers; 11 participants; originally planned for 20 but reduced due to COVID-19
- Attended the MITP Summer School 21 Jul 2019 – 9 Aug 2019
Topic: Non-perturbative Phenomena and the Early Universe
- C1.1 Deutsch als Fremdsprache Kurs (Note 1.3; 93%) Apr 2020 – Jul 2020
 B2 Deutsch als Fremdsprache Kurs (Note 1.7; 90%) Oct 2019 – Feb 2020
- Participated in the Research Education and Development Retreat Dec 2017
 Held at Australian National University's Kioloa campus
- Participated in Graduate Winter School on the Philosophy of Time (Sydney University) \sim Jun 2017
- Sung in numerous choirs (university, chapel, church) 2016 – 2019
- Solved [254 problems](#) on the mathematical programming site [Project Euler](#) 2011 – 2013