

Mitchell de Vries

Laser Physics Centre
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EDUCATION

Master of Philosophy, Physics
LPC, RSPE, Australian National University
Imaging nanoscale electric fields with NV centres
Commenced Feb 2017

Bachelor of Science (Honours), Physics
Australian National University
Collective excitation of the ^{56}Fe nucleus
Graduated July 2016

Victorian Certificate of Education
Marian College Myrtleford, Myrtleford, Victoria
Graduated November 2011

PROFESSIONAL EXPERIENCE

RESEARCH

Laser Physics Centre February 2017 – Present
Research School of Physics and Engineering, Australian National University

- Constructing an inverted confocal microscope for use in NV centre ODMR measurements to be conducted in conjunction with an atomic force microscope.
- Designing, characterising, and implementing electric, magnetic, and microwave circuitry and associated control systems for microscope system.
- Using the confocal microscope setup to measure and image nanoscale electric fields.

Nuclear Physics Department March 2012 – December 2016
Research School of Physics and Engineering, Australian National University

- Identified and characterised shape coexistence in ^{56}Fe by observing and measuring E0 transitions in ^{56}Fe .
- Improved simulations used for characterising the efficiencies of the Super-e Spectrometer system at the ANU's 14UD accelerator.
- Analysed historical data to compare to recent measurements of the Hoyle State of ^{12}C .
- Assisted in the running of experiments, from the assembly of targets to the running of the 14UD particle accelerator.

Max Plank Institute for Nuclear Physics July 2011 – August 2011
Heidelberg, Germany

- Worked as research intern as part of the International Summer Science School Heidelberg, assisting in experiments on the Cold Trap for Fast Ion Beams.

- Presented findings at the end of the summer school to fellow students, supervising scientists and local dignitaries.

TEACHING

Laboratory Demonstrator

February 2016 – Present

Australian National University

- Guide students through physics lab sessions to develop their practical and theoretical skills in physics.
- Mark both weekly labs and exams, providing feedback and suggestions on how to improve their physics.

Physics Outreach

February 2016 – Present

Australian National University

- Guide high school students visiting the ANU through a number of physics experiments to teach simple physical principles.

Private Tutor

September 2012 – Present

Canberra, Australia

- Tutoring Year 10, 11 and 12 students in various levels of mathematics, as well as physics and chemistry.

OTHER

Field Technician

Jun 2012 – Present

GEMS, Whorouly, Victoria, Australia

- Analyse data from historical and current assays for mining viability.
- Convert and collate mapping data for use in computer models.
- Provide in-field assistance to lead geologist and log drill core.
- Drill rig offsider.

PUBLICATIONS

- L.J. Evitts, A.B. Garnsworthy, T. Kibédi, J. Smallcombe, M.W. Reed, A.E. Stuchbery, G.J. Lane, T.K. Eriksen, A. Akber, B. Alshahrani, **M. de Vries**, M.S.M. Gerathy, J.D. Holt, B.Q. Lee, B.P. McCormick, A.J. Mitchell, M. Moukaddam, S. Mukhopadhyay, N. Palalani, T. Palazzo, E.E. Peters, A.P.D. Ramirez, T.G. Torny, and S.W. Yates, *E0 transition strength in stable Ni isotopes*, Physical Review C 99 (2019) 024306
- L.J. Evitts, A.B. Garnsworthy, T. Kibédi, M.W. Reed, A.E. Stuchbery, G.J. Lane, T.K. Eriksen, A. Akber, B. Alshahrani, **M. de Vries**, M.S.M. Gerathy, B. Lee, B. McCormick, A. Mitchell, N. Palalani, and T.G. Torny, *Identification of significant E0 strength in the $2_2^+ \rightarrow 2_1^+$ transitions of $^{58,60,62}\text{Ni}$* , Physics Letters B 779 (2018) 396-401
- T.K. Eriksen, T. Kibédi, M.W. Reed, A.E. Stuchbery, A. Akber, **M. de Vries**, J. Dowie, L.J. Evitts, A.B. Garnsworthy, M.S.M. Gerathy, S.S. Hota, G.J. Lane, A.J. Mitchell, T. Palazzo, J. Smallcombe, and T.G. Torny, *The 3α Process Studied Through the Pair Conversion Transitions from the Hoyle State in ^{12}C* , XIV International Symposium on Nuclei in the Cosmos, Proceedings of Science (2016)
- T.K. Eriksen, T. Kibédi, M.W. Reed, **M. de Vries**, A.E. Stuchbery, A. Akber, J. Dowie, L.J. Evitts, A.B. Garnsworthy, M.S.M. Gerathy, G.J. Lane, A.J. Mitchell, S. Mukhopadhyay, T. Palazzo, E.E. Peters, A. P.D. Ramirez, J. Smallcombe, T.G. Torny, J.L. Wood, and S.W. Yates, *Systematic Studies of E0 Transitions in $^{54,56,58}\text{Fe}$* , XIV International Symposium on Nuclei in the Cosmos, Proceedings of Science (2016)
- T. Kibédi, A.E. Stuchbery, P. Copp, **M. de Vries**, R. Pitt, B. Alshahrani, V. Margerin, and G.D. Dracoulis, *Pair Conversion Spectroscopy of the Hoyle State*, XII International Symposium on Nuclei in the Cosmos, Proceedings of Science (2012)

SCHOLARSHIPS AND GRANTS

- **2017 – Present** ANU Master’s Scholarship
- **2015** Ben Williams Student Support Grant

SKILLS

- Experienced with data analysis, experimental design, modelling, instrumentation.
- Communicating science-focused presentations to members of the public, stakeholders, and students.
- Programming in Python, C/C++, Mathematica and FORTRAN.
- Modelling electromagnetic systems with COMSOL.
- Designing mechanical components using CAD software suites.
- Fabrication of custom mechanical and electronic components using both rapid prototyping machinery and traditional workshop equipment (lathe, milling machine, drills etc).
- Skilled with L^AT_EX, MS office, MS and Unix operating systems.

VOLUNTEER EXPERIENCE

National Youth Science Forum

2015 – Present

The National Youth Science Forum (NYSF) is a not-for-profit organisation that runs a number of residential programs to encourage young people in their passion for science.

- **2019** Took part in Q&A panels focusing on experiences in science and career pathways from NYSF and STEM degrees.
- **2019** Conducted tours for students and high school teachers around Laser Physics Centre labs, explaining the research that colleagues and I undertake there.
- **2017** Chaperoned students on international trip to Singapore to take part in science program.
- **2017** Spoke as an NYSF alumnus about my experiences in science as well as career pathways.
- **2015 – Present** Attend public events to spread information about the NYSF.
- **2015 – Present** Assist in various aspects of running, planning and organising the NYSF.
- **2011** Attended NYSF.

The Science Experience

2017 – Present

The Science Experience provides students who have an interest in science with an opportunity to engage in a wide range of fascinating science activities under the guidance of scientists who love their work.

- **2017 – Present** Student Leader for the ANU program of The Science Experience, facilitating and chaperoning the students through the program.

REFEREES

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Australian National University

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Australian National University

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