

# Dominik Koll

## Curriculum Vitae

### Personal Data

Name: **Dominik Koll**  
Birth: **15/10/1993**  
Nationality: **German**  
Degree: **Master of Science**  
Languages: **German/English/French**, *Mother tongue/Proficient/Basic*

### Academic Education

2018 **PhD Candidate**, *Australian National University*, Department of Nuclear Physics  
**Master of Science**, *Technical University of Munich*, Physics Department  
Passed with High Distinction (1.0)  
2015-2018 **M.Sc. Candidate**, *Technical University of Munich*, Physics Department  
Nuclear-Particle-Astrophysics  
2015 **Bachelor of Science**, *Technical University of Munich*, Physics Department  
2012-2015 **B.Sc. Candidate**, *Technical University of Munich*, Physics Department

### Masters Thesis

Title *Search for Recent  $^{60}\text{Fe}$  Deposition in Antarctica with AMS*  
Supervisors Prof. S. Schoenert & Dr G. Korschinek & Dr. T. Faestermann  
Description I detected for the first time ever a recent  $^{60}\text{Fe}$  influx onto Earth of interstellar origin in a new geological archive, Antarctic snow, which was subsequently confirmed in deep-ocean sediments. This discovery opens the door towards the history of the solar neighbourhood.

### Bachelors Thesis

Title *Search for Supernova  $^{60}\text{Fe}$  in Magnetically Extracted Magnetosomes*  
Supervisors Prof. S. Bishop & Dr P. Ludwig  
Description I implemented two different magnetic extraction techniques for biogenic magnetite chains in deep-ocean sediments containing stellar  $^{60}\text{Fe}$  to reduce dilution by abundant stable Fe.

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## Teaching Experience

- 2020 **Demonstrator**, *2nd year lab course (QM, ED, TD, Stat., Mech., Python)*  
Prof. B. Buchler
- 2017-2018 **Tutor**, *Introduction to Nuclear-Particle-Astrophysics exercise session*  
Prof. B. Maerkisch
- Examiner**, *Introduction to Nuclear-Particle-Astrophysics*  
Prof. B. Maerkisch
- 2017 **Tutor**, *Nuclear-Particle-Astrophysics 2 exercise session*  
Prof. B. Maerkisch
- Tutor**, *Nuclear Astrophysics exercise session*  
Prof. S. Bishop
- 2016-2017 **Tutor**, *Nuclear-Particle-Astrophysics 1 exercise session*  
Prof. B. Maerkisch
- Examiner**, *Nuclear-Particle-Astrophysics 1*  
Prof. B. Maerkisch
- 2016 **Tutor**, *Nuclear-Particle-Astrophysics 2 exercise session*  
Prof. L. Fabbietti
- 2015-2016 **Tutor**, *Nuclear-Particle-Astrophysics 1 exercise session*  
Prof. P. Fierlinger
- 2015 **Tutor**, *Mathematical preparatory course*  
Dr. F. Himstedt

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## Professional Experience

- since 2020 **First Aid Officer**, *HLTAID006 & HLTAID007, Research School of Physics, ANU*  
Dr. C. Notthoff
- 2019 **Proceedings Editorial Committee**, *Heavy Ion Accelerator Symposium, Canberra*  
Dr. AJ Mitchell
- Peer Reviewer**, *Proceedings of the Heavy Ion Accelerator Symposium, Canberra*  
Dr. S. Pavetich
- 2018 **Research Assistant**, *Excellence Cluster Universe, Garching*  
Dr. G. Korschinek
- 2016-2018 **Student Representative**, *Research Committee of Maier-Leibnitz-Laboratory, Garching*  
Prof. S. Paul
- 2016-2018 **Volunteer**, *Public relations work at Maier-Leibnitz-Laboratory, Garching*  
Dr. L. Beck
- 2017-2018 **Coordinator**, *Beamtimes at Maier-Leibnitz-Laboratory, Garching*  
Dr. T. Faestermann
- 2017 **Coordinator**, *Mathematical preparatory course of mathematics, informatics and physics*  
Dr. F. Himstedt
- 2016 **Research Assistant (Student)**, *Excellence Cluster Universe, Garching*  
Dr. G. Korschinek

## Projects, Proposals

- 2020 **Principal Investigator**, *ANSTO Research Proposal #AP12793*,  
"Investigation of interstellar  $^{244}\text{Pu}$  and  $^{247}\text{Cm}$  influx recorded in the FeMn crust VA13/2"  
**Principal Investigator**, *RADIATE Proposal #20002142-ST*,  
" $^{10}\text{Be}$  measurements of a ferromanganese crust for dating the influx of interstellar  $^{60}\text{Fe}$   
and  $^{244}\text{Pu}$ "
- 2019 **Co-Proposer**, *ANSTO Research Proposal #AP12193*,  
"Search for interstellar Pu-244 and Cm-247 in a new deep-sea FeMn crust"

## Awards, Grants, Prices, Scholarships

- 2020 **AINSE PGRA**, *Postgraduate Research Award, Australian Institute of Nuclear Science and Engineering*,  
14,865 AUD
- 2019 **John and Silvia Newton Award**, *Research School of Physics, ANU*,  
tbd  
Founders Day and 70th Anniversary of Physics at ANU in Canberra, Australia
- Dean's Prize**, *Research School of Physics, ANU*,  
500 AUD  
John Carver Seminar Series in Canberra, Australia
- Travel Grant**, *Wilhelm and Else Heraeus Foundation Communication Programme*,  
340 EUR  
German Physical Society Annual Meeting in Rostock, Germany
- 2018 **Scholarship**, *ANU PhD Scholarship (International)*,  
28,092 AUD, annually, 3 years
- Scholarship**, *ANU HDR Fee Remission Scholarship*
- Scholarship**, *ANU Supplementary Scholarship*,  
7,000 AUD, annually, 3 years
- Travel Grant**, *Wilhelm and Else Heraeus Foundation Communication Programme*,  
140 EUR  
German Physical Society Annual Meeting in Erlangen, Germany
- 2017 **Travel Grant**, *High Voltage Engineering*,  
300 CAD  
14th International Accelerator Mass Spectrometry Conference in Ottawa, Canada
- Travel Grant**, *Wilhelm and Else Heraeus Foundation Communication Programme*,  
200 EUR  
German Physical Society Annual Meeting in Mainz, Germany

## Publications

- 2020 A. Wallner, J. Feige, L.K. Fifield, M.B. Froehlich, R. Golser, M.A.C. Hotchkis, **D. Koll**, G. Leckenby, M. Martschini, S. Merchel, S. Panjkov, S. Pavetich, G. Rugel, S.G. Tims, *60Fe deposition during the late Pleistocene and the Holocene echoes past supernova activity*, Proceedings of the National Academy of Sciences, 201916769 (2020)
- A. Bischoff, C. Alexander, J.-A. Barrat, C. Burkhardt, H. Busemann, D. Degering, T. Di Rocco, M. Fischer, T. Fockenberg, D. I. Foustoukos, J. Gattaccca, J. R. A. Godinho, D. Harries, D. Heinlein, J. L. Hellmann, N. Hertkorn, A. Holm, A. J. T. Jull, I. Kerraouch, A. J. King, T. Kleine, **D. Koll**, J. Lachner, T. Ludwig, S. Merchel, C. Mertens, P. Morino, W. Neumann, A. Pack, M. Patzek, S. Pavetich, M. P. Reitze, M. Ruefenach, G. Rugel, C. Schmidt, P. Schmitt-Kopplin, M. Schoenbaechler, M. Tieloff, A. Wallner, K. Wimmer, E. Woelfer, *The old, unique C1 chondrite Flensburg – insight into the first processes of aqueous alteration, brecciation, and the diversity of water-bearing parent bodies and lithologies*, Geochimica et Cosmochimica Acta, submitted (2020)
- I. Leya, J. C. David, T. Faestermann, M. B. Froehlich, N. Kivel, **D. Koll**, G. Korschinek, S. McIntyre, S. Merchel, S. Pavetich, G. Rugel, D. Schumann, T. Smith, A. Wallner, *53Mn and 60Fe in iron meteorites - new data and model calculations*, Meteoritics & Planetary Science 1–14 (2020)
- D. Koll**, T. Faestermann, G. Korschinek, A. Wallner, *Origin of Recent Interstellar 60Fe on Earth*, EPJ Web of Conferences 232, 02001 (2020)
- Z. Slavkovska, A. Wallner, R. Reifarh, S. Pavetich, B. Brückner, K. Al-Khasawneh, **D. Koll**, S. Merchel, M. Volkand, M. Weigand, *Investigation of 54Fe(n,γ)55Fe and 35Cl(n,γ)36Cl reaction cross sections at keV energies by Accelerator Mass Spectrometry*, EPJ Web of Conferences 232, 02005 (2020)
- 2019 **D. Koll**, G. Korschinek, T. Faestermann, J.M. Gomez-Guzman, S. Kipfstuhl, S. Merchel, J.M. Welch, *Interstellar 60Fe in Antarctica*, Physical Review Letters 123, 072701 (2019), [Editors' Suggestion, Featured in Physics, Altmetric Score > 780](#)
- F. Quinto, C. Busser, T. Faestermann, K. Hain, **D. Koll**, G. Korschinek, S. Kraft, P. Ludwig, M. Plaschke, T. Schaefer, H. Geckeis, *Ultra-trace determination of 99Tc in small natural water samples by Accelerator Mass Spectrometry with the Gas-Filled Analyzing Magnet System*, Analytical Chemistry 91, 7 (2019)

Y. Huang, S. G. Tims, M. B. Froehlich, S. Pan, L. K. Fifield, S. Pavetich, **D. Koll**,  
*The  $^{240}\text{Pu}/^{239}\text{Pu}$  atom ratio in Chinese soils*,  
Science of The Total Environment 678 (2019)

**D. Koll**, C. Busser, T. Faestermann, J.M. Gomez-Guzman, K. Hain, A. Kinast,  
G. Korschinek, D. Krieg, M. Lebert, P. Ludwig, F. Quinto,  
*Recent Developments for AMS at the Munich Tandem Accelerator*,  
Nuclear Instruments and Methods in Physics Research B 438 (2019)

2018 K. Hain, B. Deneva, T. Faestermann, L. Fimiani, J. M. Gomez-Guzman, **D. Koll**, G.  
Korschinek, P. Ludwig, V. Sergeyeva, N. Thiollay,  
*AMS of  $^{93}\text{Zr}$ : passive absorber versus gas-filled-magnet*,  
Nuclear Instruments and Methods in Physics Research B 423 (2018)

## Conferences, Meetings, Programs, Schools, Seminars, Symposia

- 2020 **Attendee**  
AINSE QLD, ACT and regional NSW Symposium, online
- 2019 **Award Winning Seminar Talk**, *Single Atom Counting of Nearby Supernova Ejecta on Earth*  
John Carver Seminar Series, The Australian National University, Australia
- Conference Talk**, *Evidence for Recent Interstellar  $^{60}\text{Fe}$  on Earth*  
Heavy Ion Accelerator Symposium on Fundamental and Applied Science in Canberra, Australia
- Conference Talk**, *Detection of Extraterrestrial  $^{60}\text{Fe}$  in Antarctica with AMS*  
German Physical Society Annual Meeting in Rostock, Germany
- 2018 **Conference Talk**,  *$^{60}\text{Fe}$  and  $^{244}\text{Pu}$  on Earth - Access to the Solar Neighbourhood, Stars and the Past of Earth*  
Australian Institute of Physics Congress in Perth, Australia
- Attendee**  
Heavy Ion Accelerator Symposium on Fundamental and Applied Science in Canberra, Australia
- Invited Talk**, *AMS for Astrophysics and Environmental Physics at the MLL*  
VERA-Seminar, University of Vienna, Austria
- Conference Talk**, *Search for Recent  $^{60}\text{Fe}$  Deposition in Antarctic Snow via AMS*  
German Physical Society Annual Meeting in Erlangen, Germany
- 2017 **Conference Poster**, *Recent Developments for AMS with Medium Mass Isotopes at the Munich Tandem Accelerator*  
14th International Accelerator Mass Spectrometry Conference in Ottawa, Canada
- Attendee**  
Russbach Nuclear Astrophysics School in Russbach, Austria
- Conference Talk**, *Current Developments for AMS with Medium Mass Isotopes in Garching*  
German Physical Society Annual Meeting in Mainz, Germany
- Conference Poster**, *Research and Upgrade of AMS at the Munich Tandem Accelerator*  
German Physical Society Annual Meeting in Mainz, Germany
- 2014 **Attendee**  
ATHENS Programme in Vienna, Austria

## Highlighted Research

- English **American Physical Society Synopsis,**  
*Seeking Stardust in the Snow,*  
12.08.2019
- CNN,**  
*Researchers found supernova dust in snow from Antarctica,*  
20.08.2019
- Gizmodo,**  
*Supernova Could Have Left Radioactive Dust In Antarctic Ice,*  
11.08.2019
- NBC News,**  
*Space dust from ancient supernova found hiding in Antarctica,*  
15.08.2019
- New Scientist,**  
*Radioactive dust in Antarctic ice could help map interstellar clouds,*  
14.08.2019
- The New York Times,**  
*A Supernova Was Hiding in Antarctica's Snow,*  
19.08.2019
- PBS,**  
*Iron from ancient supernovae may still be raining down on Earth,*  
12.08.2019
- PhysicsWorld,**  
*Antarctic snow yields interstellar iron,*  
31.07.2019
- Scientific American,**  
*Space Dust from Ancient Supernova Found Hiding in Antarctica,*  
14.08.2019
- Scientific American,**  
*Secrets of the Universe Trapped in Antarctic Snow,*  
14.08.2019
- German **Deutschlandfunk,**  
*Neuer Fund von Eisen-60: Grüße von der Supernova,*  
06.05.2019
- Neue Zuercher Zeitung,**  
*Der radioaktive Staub einer Supernova rieselt auf die Erde nieder,*  
17.08.2019
- Spiegel,**  
*Der rätselhafte Weltraum-Staub im Schnee,*  
15.08.2019
- Passauer Neue Presse,**  
*Sternenstaub: Physiker aus Region sorgt mit Forschung für Aufsehen,*  
24.08.2019

An extended list about media attention and science communication could be provided



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## References

- Internal **Prof. Dr. A. Wallner**, *ANU and HZDR*  
a.wallner@hzdr.de
- Prof. Dr. L. K. Fifield**, *The Australian National University (ANU)*  
keith.fifield@anu.edu.au
- Dr. G. Korschinek**, *Technical University of Munich (TUM)*  
korschin@tum.de
- Dr. T. Faestermann**, *Technical University of Munich (TUM)*  
thomas.faestermann@mytum.de
- External **Dr. K. Hain**, *University of Vienna*  
karin.hain@univie.ac.at
- Dr. S. Merchel**, *Helmholtz-Zentrum Dresden-Rossendorf (HZDR)*  
s.merchel@hzdr.de
- Dr. F. Quinto**, *Karlsruhe Institute of Technology (KIT)*  
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## Impact Factors 07.2020

- 17.0 **Physical Review Letters - Editor's Suggestion (certified, 08.2019)**  
<https://journals.aps.org/prl/about>
- 9.6 **Proceedings of the National Academy of Sciences**  
<https://www.pnas.org/page/about/metrics>
- 8.4 **Physical Review Letters**  
<https://journals.aps.org/prl/about>
- 6.8 **Analytical Chemistry**  
<https://pubs.acs.org/journal/ancham>
- 6.6 **Science of the Total Environment**  
<https://www.journals.elsevier.com/science-of-the-total-environment>
- 4.7 **Geochimica et Cosmochimica Acta**  
<https://www.journals.elsevier.com/geochimica-et-cosmochimica-acta>
- 2.9 **Meteoritics and Planetary Sciences**  
<https://pericles.pericles-prod.literatumonline.com/journal/19455100>
- 1.3 **Nuclear Instruments and Methods in Physics Research B**  
<https://www.journals.elsevier.com/nuclear-instruments-and-methods-in-physics-research-section-b-beam-interactions-with-materials-and-atoms>

Canberra, August 27, 2020  
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