

Tina Arh

Physics PhD student



PERSONAL DETAILS

Birth April 20, 1995
Address Celovška cesta 161, 1000 Ljubljana, Slovenia
Phone +38641992268
Mail tina.arh@ijs.si
Web <http://quantum.ijs.si/people/tina-arh/>

EDUCATION

PhD in Physics

2019 - present

Faculty of Mathematics and Physics, University of Ljubljana

Thesis: Stability of spin liquids in two dimensions

Mentor: Assoc. Prof. Andrej Zorko

MSc in Physics

2017 - 2019

Faculty of Mathematics and Physics, University of Ljubljana

Programme: Condensed matter physics

Finished with average grade 9.63 (passing grades from 6 to 10)

Master's thesis: *Non-destructive imaging and magnetometry with Faraday rotation in a gas of cesium atoms*, thesis grade: 10, mentor: Prof. Rok Žitko, co-mentor: Dr. Peter Jeglič

BSc in Physics

2014 - 2017

Faculty of Mathematics and Physics, University of Ljubljana

Finished with average grade 9.83

RESEARCH EXPERIENCE

Quantum Materials Group

2019 - present

Jožef Stefan Institute

Experimental research on frustrated magnetism and quantum spin liquids using local-probe magnetic techniques and neutron scattering. Experience in nuclear magnetic resonance (NMR) and electron spin resonance (ESR) experiments, done in a laboratory on-site, as well as muon spin spectroscopy (μ SR) and neutron scattering, done in large-scale user facilities. Worked on 12 (+5 upcoming) μ SR beamtimes at PSI, 3 (+3) at ISIS, and 1 neutron beamtime at PSI, 3 (+1) at ISIS. Supervisor: Assoc. Prof. Andrej Zorko.

Cold Atom Laboratory

2017 - 2019

Jožef Stefan Institute

Experimental research on optical atomic magnetometry and non-destructive imaging. Experience in working with lasers, optical setup, magnetic field control, and data acquisition. Supervisor: Dr. Peter Jeglič.

TEACHING, SPEAKING & OUTREACH

Teaching assistant: Classical physics exercise class for 1st year students at Faculty of Chemistry and Chemical Technology, University of Ljubljana 2020 - present

Invited speaker at the Physics in Ljubljana 2022 Summer School 2022

Poster at the Highly Frustrated Magnetism Conference 2022 in Paris 2022

Promotion of physics studies at the Education and Youth Career Fair 2020 2020

Public science promotion for European Researchers' Night 2018 2018

AWARDS & GRANTS

University of Ljubljana: Special Commendation for students with the best academic achievements 2020

Best Poster Award at ISIS Neutron Training Course 2020

Faculty Dean Award for outstanding academic success 2015, 2016, 2018 and 2020

Short Term Scientific Mission Grant awarded by the European Cooperation in Science and Technology (COST) Action "Quantum Technologies with Ultra-Cold Atoms" 2019

National "Zois scholarship" for gifted students 2010 - 2019

SKILLS

Languages Slovene (native), English (advanced)

Programming

‡ Data Analysis PYTHON, MATHEMATICA, ORIGIN, MUSRFIT, MANTID, FULLPROF

Website ‡

Social Creator and admin of COST Action website atomqt.eu and research group website quantum.ijs.si. Social media manager for the Faculty of Mathematics and Physics (2015 - 2022).

PUBLICATIONS

T. Arh, E. Stonič, F. Hotz, M. Gomilšek, M. Pregelj, H. Luetkens, P. Umek, Z. Jagličič, and A. Zorko, *The nature of magnetic defects in the kagome-lattice spin-liquid candidate Zn-barlowite*, in preparaton

Ž. Gosar, T. Arh, K. Jaksetič, A. Zorko, W. Liu, H. Wu, C. Wang, H. Luetkens, B. Lv, and D. Arčon, *The pairing symmetry in quasi-one-dimensional superconductor $Rb_2Mo_3As_3$* , [Journal of Physics and Chemistry of Solids \(2023\)](#)

F. Hotz, T. Arh, Z. Guguchia, D. Das, C. Wang, M. Gomilšek, A. Zorko, and H. Luetkens, *An experimental procedure to determine quantitative muon Knight shifts*, [Journal of](#)

Physics: Conference Series **2462**, 012041 (2023)

T. Arh, B. Sana, M. Pregelj, P. Khuntia, Z. Jagličić, M. D. Le, P. K. Biswas, P. Manuel, L. Mangin-Thro, A. Ozarowski, and A. Zorko, *The Ising triangular-lattice antiferromagnet neodymium heptatantalate as a quantum spin liquid candidate*, *Nature Materials* **21**, 416 (2022)

W. Sun, T. Arh, M. Gomilšek, P. Koželj, S. Vrtnik, M. Herak, J.-X. Mi, and A. Zorko, *Magnetic ordering of the distorted kagome antiferromagnet $Y_3Cu_9(OH)_{18}[Cl_8(OH)]$ prepared via optimal synthesis*, *Physical Review Materials* **5**, 064401 (2021)

J. Khatua, T. Arh, Shashi B. Mishra, H. Luetkens, A. Zorko, B. Sana, M. S. Ramachandra Rao, B. R. K. Nanda, and P. Khuntia, *Development of short and long-range magnetic order in the double perovskite based frustrated triangular lattice antiferromagnet Ba_2MnTeO_6* , *Scientific Reports* **11**, 6959 (2021)

K. Gosar, T. Arh, T. Mežnaršič, I. Kvasič, D. Ponikvar, T. Apih, R. Kaltenbaek, R. Žitko, E. Zupanič, S. Beguš, and P. Jeglič, *Single-shot Stern-Gerlach magnetic gradiometer with an expanding cloud of cold cesium atoms*, *Physical Review A* **103**, 022611 (2021)

P. Prelovšek, M. Gomilšek, T. Arh, and A. Zorko, *Dynamical spin correlations of the kagome antiferromagnet*, *Physical Review B* **103**, 014431 (2021)

T. Arh, M. Gomilšek, P. Prelovšek, M. Pregelj, M. Klanjšek, A. Ozarowski, S. J. Clark, T. Lancaster, W. Sun, J.-X. Mi, and A. Zorko, *Origin of Magnetic Ordering in a Structurally Perfect Quantum Kagome Antiferromagnet*, *Physical Review Letters* **125**, 027203 (2020)

Ž. Gosar, N. Janša, T. Arh, P. Jeglič, M. Klanjšek, H. F. Zhai, B. Lv, and D. Arčon, *Superconductivity in the regime of attractive interactions in the Tomonaga-Luttinger liquid*, *Physical Review B* **101**, 220508(R) (2020)

T. Mežnaršič, R. Žitko, T. Arh, K. Gosar, E. Zupanič, and P. Jeglič, *Emission of correlated jets from a driven matter-wave soliton in a quasi-one-dimensional geometry*, *Physical Review A* **101**, 031601(R) (2020)

T. Arh, *Non-destructive imaging and magnetometry with Faraday rotation in a gas of cesium atoms*, Master's thesis, [University of Ljubljana](#) (2019)

T. Mežnaršič, T. Arh, J. Brenc, J. Pišljari, K. Gosar, Ž. Gosar, R. Žitko, E. Zupanič, and P. Jeglič, *Cesium bright matter-wave solitons and soliton trains*, *Phys. Rev. A* **99**, 033625 (2019)

T. Arh, *Solitary matter-waves in Bose-Einstein condensates*, *Matrika* **5** (2018), Faculty of Mathematics and Physics, [University of Ljubljana](#)