

Address: CCIS, UofA, Edmonton, AB, Canada

☎ Contact: 587-700-1734

✉ Email: tashchil@ualberta.ca

🌐 <https://arinainphysics.netlify.app/>

ORCID: 0000-0002-7700-3352

Arina Tashchilina

Education

- 2014 – 2019 PhD, University of Calgary, Calgary, Canada
Advisor: Prof. Barry Sanders & Prof. Alexander Lvovsky
Research: Two-mode squeezing in a cold atomic ensemble
- 2006 – 2012 BSc and MSc, Moscow State University, Moscow, Russia
Advisor: Prof. Aleksey Zheltikov
Research: Solving NLSE in order to find eigenmodes of multicore photonic-crystal fiber

Work Experience

- 2020 – 2023 Postdoctoral Scholar, UofA, Edmonton, AB, Canada
interruptions due to COVID19 and maternity leave
- 2014 – 2019 Teaching Assistant, UofC, Calgary, AB, Canada
- 2014 PHYS223 and PHYS369
 - 2015 PHYS259 and PHYS369
 - 2016 PHYS259 and PHYS397
 - 2017 building new lab for physics department
"Quantum entanglement"
 - 2018 PHYS497
 - 2019 PHYS497
- 2012 – 2013 volunteered to teach outstanding high-school student basics of Quantum Optics under prof. Alexander Lvovsky supervision
- 2012 – 2013 Private Physics and Math Tutor for Highschool and Undergraduate Students
- 2008 – 2013 Junior Research Fellow, International Laser Center, Moscow State University

Prizes and nominations

- 2023 Research Day Speed Talk Winner

Publications

13. Nicholas Milson, Arina Tashchilina, Tian Ooi, Anna Prus-Czarnecka, Zaheen F. Ahmad, and Lindsay J. LeBlanc "High-dimensional reinforcement learning for optimization and control of ultracold quantum gases", in preparation.
12. Arina Tashchilina, Logan W. Cooke, Joseph Lindon, E. S. Moiseev, and Lindsay J. LeBlanc "Raman coupling beyond adiabatic approximation", in preparation.
11. Logan W. Cooke, Arina Tashchilina, Mason Protter, Joseph Lindon, Tian Ooi, Frank Marsiglio, Joseph Maciejko, and Lindsay J. LeBlanc "Floquet-engineered holonomic gate operations are not robust", arXiv:2307.12957 (2023)
10. Joseph Lindon, Arina Tashchilina, Logan W. Cooke, and Lindsay J. LeBlanc "Complete Unitary Qutrit Control in Ultracold Atoms", Phys. Rev. Applied, 19, 034089 (2023)
9. E. S. Moiseev, Arina Tashchilina, C. Kupchak and A. I. Lvovsky "Raman noises in gradient echo memory", Physical Review A, awaits publication
8. Arina Tashchilina, E. S. Moiseev, Xinxin Guo and A. I. Lvovsky "Generation of two-mode squeezing between atoms and light", in preparation
7. E. S. Moiseev, Arina Tashchilina, S. A. Moiseev and Barry C Sanders, "Broadband quantum memory in a cavity via zero spectral dispersion", New J. Phys. 23, 063071 (2021)
6. E. S. Moiseev, Arina Tashchilina, S. A. Moiseev and A. I. Lvovsky "Darkness of two-mode squeezed light in Λ -type atomic system" New J. Phys. 22 013014 (2020)
5. A Tashchilina, "Two-mode squeezing in a cold atomic ensemble", Thesis, (2019)
4. Fan Yang, Arina Tashchilina, E. S. Moiseev, Christoph Simon, and A. I. Lvovsky "Far-field linear optical superresolution via heterodyne detection in a higher-order local oscillator mode" Vol. 3, Issue 10, pp. 1148-1152 (2016)
3. Fang, Xiao-hui; Hu, Ming-lie; Huang, Li-li; Chai, Lu; Dai, Neng-li; Li, Jin-yan; Tashchilina, A Yu; Zheltikov, Aleksei M; Wang, Ching-yue, "Multiwatt octave-spanning supercontinuum generation in multicore photonic-crystal fiber" Optics Letters, Vol. 37 Issue 12, pp. 2292-2294 (2012)
2. I.V. Fedotov, N.A. Safronov, Yu.A. Shandarov, A.Yu. Tashchilina, A.B. Fedotov, A.P.Nizovtsev, D.I. Pustakhod, V.N. Chizevski, T.V. Matveeva, K. Sakoda, S.Ya. Kilin, and A.M. Zheltikov, "Photonic-crystal-fiber-coupled photoluminescence interrogation of nitrogen vacancies in diamond Nanoparticles. Laser Physics Letters." 9(2), 151 – 154 (2012).

1. I.V. Fedotov, A.U. Tashchilina, L.V. Doronina, A.B. Fedotov, P.A. Gohov, D.A. Sidorov-Birukov, M. V. Alfimov, A.M. Zheltikov, "Nanoparticles in nanowaveguide: enhanced-functionality optical systems based on impregnated with nanoparticles micro- and nano wave guides", Russian nanotechnologies, 5, (3-4), p. 98-100 (2010)

Conferences

- 2023 Arina Tashchilina and Lindsay LeBlanc, "Ultracold system for quantum simulation", Quantum Alberta Research Showcase, Calgary, Canada (Poster, November 15)
- 2023 Arina Tashchilina and Lindsay LeBlanc, "Suppressing and tuning-out Raman transitions in multilevel alkali atoms via multi-path interference", Quanta Create, Edmonton, Canada (Talk, July 31)
- 2023 Arina Tashchilina, Nicholas Milson, Tian OOi, and Lindsay J. LeBlanc, "Towards robust neutral-atom BEC production with the help of machine learning", CAP congress, Fredericton, Canada (Talk, June 21)
- 2023 Arina Tashchilina, Logan Cooke, Evgeny Moiseev, Joseph Lindon, Tian Ooi, Nicholas Milson, and Lindsay LeBlanc, "Suppressing and tuning-out Raman transitions in multilevel alkali atoms via multi-path interference", DAMOP meeting, Spokane, Washington, USA (Talk, June 6)
- 2023 Arina Tashchilina, Nicholas Milson, Tian Ooi, Anna Prus-Czarnecka, and Lindsay J. LeBlanc, "Towards robust neutral-atom BEC production with the help of machine learning", DAMOP meeting, Spokane, Washington, USA (Poster, June 6)
- 2022 Arina Tashchilina, Logan W. Cooke, Joseph Lindon, Eugene Moiseev, and Lindsay J. LeBlanc, "Suppression of Raman Interaction Due to Destructive Interference in Alkali Atoms", CAP congress, Hamilton, Canada (Talk, June 5-10)
- 2022 Arina Tashchilina, Barry Sanders, Eugene Moiseev, Alexander Lvovsky, Sergey Moiseev, and Xianxin Guo, "Two-mode squeezing in cold atomic ensembles", DAMOP meeting, Orlando, Florida, USA (Talk, May 30 – June 3)
- 2022 Arina Tashchilina, Logan W. Cooke, Joseph Lindon, Eugene Moiseev, and Lindsay J. LeBlanc, "Suppression of Raman Interaction Due to Destructive Interference in Alkali Atoms", DAMOP meeting, Orlando, Florida, USA (Poster, May 30 – June 3)
- 2021 Arina Tashchilina, Eugene Moiseev, Sergey Moiseev, and Barry Sanders, "Broadband quantum memory in a cavity via zero spectral dispersion", CAP virtual congress (Talk, June 6 – 11)
- 2021 Arina Tashchilina, Joseph Lindon, Eugene Moiseev, Logan W. Cooke, and Lindsay J. LeBlanc, "Suppression of Raman Interaction Due to Destructive Interference in Alkali Atoms", Quantum days (Poster)

Additional education

- 2021 Summer Institute 2021: Cornerstone Models of Quantum Computing, TRIUMF

- 2013 Summer and spring school in Russian Quantum Center
- 2012 – 2013 Educational program in Russian Quantum Center
- 2011 Winter school on GPU-programming in the Research Computing Center of Moscow State University
Course of Supercomputer technology and high-performance computing in the Research Computing Center of Moscow State University
- 2009 The Third International Laser Graduate School “Modern problems of laser physics”, Moscow region, Russia

■ Services

- Judge 2023: The Canada-Wide Science Fair (CWSF)
2023: Graduate Physics Student Association (GPSA) symposium
2021: Graduate Physics Student Association (GPSA) symposium
- Invited talks 2022: "Quantum paradoxes" for high-school students at UofA
2021: "BEC preparation and its applications", lecture at Kazan State University
2020: "Quantum memories" for Quanta Create
- Supervision 2023: Wisest students
2020-2023: PhD, Master, undergraduate students, and high-school students
- Course design 2017: Quantum entanglement for University of Calgary
- Reviewer 2022: Communications Physics

■ Skills

- Programming Python, C, MatLab, Mathematica, CUDA, MPI, Open MP, LabView
- Software LTSpice, Kicad, otherCad, Zemax
- Experimental optics, lasers (ECDL, Ti:sapphire), single-photon detectors, homodyne detectors, SLM, analog and digital electronics, PID for stabilization, PHD, DDS, ultra-high vacuum
- Theoretical Solving nonlinear differential equations
- Language Russian (native), English (fluent), Spanish (intermediate), and German (intermediate)