

## CURRICULUM VITAE

29 April 2024

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**Date and place of birth:** February 7<sup>th</sup>, 1974  
Yambol, BULGARIA

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Riga, LV-1057  
LATVIA

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### Education

- 2000-2005      PhD in Physics, Department of Physics, Temple University,  
Philadelphia, PA, USA  
Dissertation topic: “State Selectivity and Eigenstate Control in  
Molecules using Multiple CW Lasers”  
Co-advisors: *Prof. A. Marjatta Lyyra* and *Prof. Francis C.  
Spano*
- 1998-2000      MA in Physics, Department of Physics, Temple University,  
Philadelphia, PA, USA
- 1993-1998      MS in Physics, *Specialization: Solid State Physics,*  
*Second Specialization: Teacher Certification for High School*  
*Education*  
Department of Physics, Sofia University “St. St. Kl. Ohridski”,  
Sofia, BULGARIA

1988-1993 High School for Mathematics and Natural Sciences  
“Academician N. Obreshkov”, Physics specialization,  
Burgas, BULGARIA

## Experience

- May 2014-present** Senior Researcher ( equivalent to Associate Professor),  
Institute of Atomic Physics and Spectroscopy, University of  
Latvia, Riga, LATVIA
- Nov.-December,  
June-July 2016;  
August-December  
2015** Research Professor (part-time), Saint-Petersburg State  
University of Information Technologies, Mechanics and Optics  
(ITMO University), St. Petersburg, RUSSIA
- April 2012-  
May 2014** Visiting Senior Researcher, EU FP7 Center of Excellence  
Project FOTONIKA-LV, Laser Centre, Faculty of Physics and  
Mathematics, University of Latvia, Riga, LATVIA  
*host: A. Ekers*
- January 2010-  
March 2012** Postdoctoral Fellow, National Institute for Theoretical Physics  
(NITheP), Stellenbosch Institute for Advanced Study, (currently  
National Institute for Theoretical and Computational Sciences,  
NITheCS), Stellenbosch, SOUTH AFRICA  
*advisor: A. V. Avdeenkova*
- November 2006-  
June 2009** Researcher, Molecular Beam Laboratory, Laser Centre,  
Faculty of Physics and Mathematics, University of Latvia,  
Riga, LATVIA  
*host: A. Ekers*
- August 2005-  
November 2006** Marie-Curie Postdoctoral Fellow, EU FP6 Marie-Curie  
Transfer of Knowledge Project LAMOL, Laser Centre,  
Molecular Beam Laboratory, Faculty of Physics and  
Mathematics, University of Latvia, Riga, LATVIA  
*advisor: A. Ekers*
- September 2000-  
December 2004** Graduate Research Assistant, Molecular Quantum Optics,  
Department of Physics, Temple University, Philadelphia, PA,  
USA  
*advisor: A. Marjatta Lyyra*  
Supported by National Science Foundation
- September 1998-  
August 2000;  
January -  
May 2005** Graduate Teaching Assistant, Department of Physics,  
Temple University, Philadelphia, PA, USA  
Taught undergraduate physics laboratory sections,  
undergraduate physics recitations and tutoring

## Scientific Visits

- 25.03-4.04.2024**      Seconded Scientist, Horizon Europe MSCA-SE project  
“*Q-DYNAMO: Quantum Dynamic Control of Atomic, Molecular and Optical Process*”, University of Ulm,  
Germany  
*host: Prof. Johannes H. Denschlag*
- 15-25.03.2024**      Seconded Scientist, Horizon Europe MSCA-SE project  
“*Q-DYNAMO: Quantum Dynamic Control of Atomic, Molecular and Optical Process*”, University of Pisa,  
Italy  
*host: Prof. Donatella Ciampini*
- 5-14.03.2024**      Seconded Scientist, Horizon Europe MSCA-SE project  
“*Q-DYNAMO: Quantum Dynamic Control of Atomic, Molecular and Optical Process*”, University of Parma,  
Italy  
*host: Prof. Sandro M. Wimberger*
- 6-28.11.2023**      Visiting Scientist, Trilateral Lithuania-Latvia-Taiwan Grant  
”Coherent Optical Control of Atomic Systems”, Department of  
Physics and Astronomy, National Central University, Taoyuan  
City, Taiwan  
*host: Assoc. Prof. Wen-Te Liao*
- 2.10-1.11.2023**      Seconded Scientist, H2020-MSCA-RISE-2017 Project  
“CanBioSe: Novel 1D photonic metal oxide nanostructures for  
early stage cancer detection”,  
SME ”SenoGrafa”, Vilnius, Lithuania  
*host: Prof. Arunas Ramanavicius*
- 12.07-11.08.2023**      Seconded Scientist, H2020-MSCA-RISE-2017 Project  
“CanBioSe: Novel 1D photonic metal oxide nanostructures for  
early stage cancer detection”,  
SME ”SenoGrafa”, Vilnius, Lithuania  
*host: Prof. Arunas Ramanavicius*
- 5-26.04.2023**      STSM on COST action CA18212: “Molecular Dynamics in  
GAS phase” (MD-GAS)  
Institute of Theoretical Physics and Astronomy, Vilnius  
University, Vilnius, Lithuania  
*host: Prof. Jelena Tamulienė*

- 21.02-14.03.2023** Visiting Scientist, Dipartimento di Scienze Matematiche, Fisiche e Informatiche, Università di Parma, Parma, Italy  
*hosts: Prof. Sandro Marcel Wimberger*
- 27.10-17.11.2022** Visiting Scientist, Trilateral Lithuania-Latvia-Taiwan Grant "Coherent Optical Control of Atomic Systems", Institute of Theoretical Physics and Astronomy, Vilnius University, Vilnius, Lithuania  
*host: Prof. Gediminas Juzeliūnas*
- 24.03-14.04.2022** STSM on COST action CA18212: "Molecular Dynamics in GAS phase" (MD-GAS) Institute of Theoretical Physics and Astronomy, Vilnius University, Vilnius, Lithuania  
*host: Prof. Jelena Tamulienė*
- 15.11-15.12.2021** Visiting Scientist, Department of Physics, Università degli Studi di Pisa, Pisa, Italy  
*hosts: Prof. Ennio Arimondo and Prof. Donatella Ciampini*
- 25.10-7.11.2021** Visiting Scientist, Latvia-France Partnership Program OSMOZE Project "States mixing in external magnetic fields in alkali atoms and molecular dimers", Laboratoire Interdisciplinaire Carnot de Bourgogne, University of Burgundy, Dijon, France  
*host: Prof. Claude LeRoy*
- 3-17.10.2021** STSM on COST action CA18212: "Molecular Dynamics in GAS phase" (MD-GAS) Institute of Theoretical Physics and Astronomy, Vilnius University, Vilnius, Lithuania  
*host: Prof. Jelena Tamulienė*
- 6-20.09.2021** STSM on COST action CA16221: "Quantum Technologies with Ultracold atoms" (AtomQT) Institute of Theoretical Physics and Astronomy, Vilnius University, Vilnius, Lithuania  
*host: Prof. Gediminas Juzeliūnas*
- 10.09-8.10.2020** STSM on COST action CA18212: "Molecular Dynamics in GAS phase" (MD-GAS) Institute of Theoretical Physics and Astronomy, Vilnius University, Vilnius, Lithuania  
*host: Prof. Jelena Tamulienė*

- 26.02-14.03.2020** STSM on COST action CA16221: “Quantum Technologies with Ultracold atoms” (AtomQT)  
Department of Physics, Sofia University “St. St. Kl. Ohridski”, Sofia, Bulgaria  
*host: Prof. Nikolay Vitanov*
- 1-30.04.2019** STSM on COST action CA16221: “Quantum Technologies with Ultracold atoms” (AtomQT)  
Institute of Theoretical Physics and Astronomy, Vilnius University, Vilnius, Lithuania  
*host: Prof. Gediminas Juzeliūnas*
- 13-26.03.2019**  
**29.08-6.09.2018** Visiting Scientist, Quantum Physics Laboratory, Institut Science et d'Ingénierie Supramoléculaires (ISIS), University of Strasbourg, Strasbourg, France  
*host: Prof. Guido Pupillo*
- 4-10.12.2018**  
**29.07-9.08.2018**  
**24-29.11.2016** Visiting Scientist, Trilateral Lithuania-Latvia-Taiwan Grant, “Quantum and Nonlinear Optics with Rydberg-State Atoms”  
Vilnius University, Vilnius, Lithuania  
*host: Dr. Julius Ruseckas*
- 4.10-22.10.2018**  
**18.04-12.05.2017**  
**19.03-11.04.2016** Visiting Scientist, Trilateral Lithuania-Latvia-Taiwan Grant, “Quantum and Nonlinear Optics with Rydberg-State Atoms”  
Ultracold Atom Laboratory, Department of Physics, National Tsing Hua University, Hsinchu, Taiwan,  
*host: Prof. Ite A. Yu*
- 5-11.11.2017**  
**9-15.06.2017**  
**15-21.10.2016** Visiting Scientist, Latvia-France Partnership Program  
OSMOZE Project “Electromagnetic field-control of the blockade/antiblockade effect in Rydberg ensembles”,  
Quantum Physics Laboratory, Institut de Science et d'Ingénierie Supramoléculaires (ISIS), University of Strasbourg, Strasbourg, France, *host: Prof. Guido Pupillo*
- 1-31.08.2016** Seconded Scientist, FP7 Project BIOSENSOR AGRICULT,  
Institute of Biophysics and Cell Engineering, National Academy of Sciences of Belarus, Minsk, Belarus
- 24.05-20.06.2016** Seconded Scientist, FP7 Project NOCTURNAL  
ATMOSPHERE, Central Institute of Aviation Motors (CIAM), Scientific Research Centre “Raduga”, Moscow, Russia, *host: A. Starik*

**14.11-19.11.2016;** Visiting Scientist, ITMO University, St. Petersburg, Russia  
**29.07-12.08.2015** *host: N. N. Bezuglov*

**20.12.2014-** Seconded Scientist, FP6 Project COLIMA, Department of  
**9.01.2015;** Physics St. Petersburg State University, St. Petersburg,  
**18.04-18.05.2014;** Russia; *host: N. N. Bezuglov*  
**22.04-22.05.2013**

**September -** Adjunct Assistant Professor, Molecular Quantum Optics group  
**December 2009;** of *A. Marjatta Lyyra*, Department of Physics, Temple University  
**April - June 2008** Philadelphia, PA, USA, Supported by Lagerqvist Research Fund  
of Temple University and the National Science Foundation

## Research Interests

- Theoretical treatment of quantum control of quantum state character in molecular systems using numerical and analytical approaches based on the density matrix equations of motion and dressed-state methods
- Simulations of experimental data on quantum control of quantum state character in molecular Lithium ( $\text{Li}_2$ )
- Development of theoretical and numerical models for Autler-Townes (AT) effect and Electromagnetically Induced Transparency (EIT) in open molecular systems
- Simulations of experimental data on AT effect and EIT in molecular Lithium ( $\text{Li}_2$ ) and Sodium ( $\text{Na}_2$ ) with spectroscopic applications for measuring transition dipole moment matrix elements, lifetimes and branching ratios of excited molecular states
- Development of theoretical and numerical models for AT effect and formation of bright and dark states in atomic and molecular systems with hyperfine structure in the steady state and dynamical regimes with spectroscopic and quantum control applications.
- Development of theoretical and numerical models for dynamics of ultracold polar molecules in microwave fields, dipole blockade and antiblockade in ultracold polar molecules.
- Development of theoretical and numerical models for quantum and nonlinear optics with Rydberg-state atoms: calculations of dipole-dipole interaction and dipole blockade radius, Rydberg-EIT mw-field control of dipole blockade and Rydberg-EIT, atom localization using Rydberg-EIT/CPT with spatially dependent fields and light vortices
- Development of theoretical and numerical models for Electromagnetically Induced Grating (EIG) with spatially dependent fields and light vortices
- Development of theoretical and numerical models for dynamic quantum control of atomic and molecular optics processes: STIRAP, Landau-Zenner schemes, quantum control using the AT effect, adiabatic and counter-adiabatic schemes
- Development of theoretical models for energy and charge transport in molecular systems
- Theoretical and numerical calculations for the impact of ionizing radiation on amino acids

- Theoretical and numerical calculations of optical properties of ZnO nanoparticles/nanorods for different applications
- Development of theoretical and numerical models for cavity-assisted quantum control of ultracold chemical reactions

## Publications

1. "Spatial Characterization of Fraunhofer Diffraction in a Four-Level Light-Matter Coupling System", S. H. Asadpour, T. Kirova, H. R. Hamed, and R. Asgari, [Phys. Rev. A \*\*109\*\*, 023702 \(2024\)](#)
2. "Discrimination of leucine and isoleucine via fragmentation by electromagnetic field", J. Tamuliene and T. Kirova, [Journal of Molecular Modeling, \*\*30\*\*, 11 \(2024\)](#), <https://doi.org/10.1007/s00894-023-05802-2>
3. "Rydberg-Rydberg Interaction Strength and Dipole Blockade Radii in the Presence of Förster Resonances", C. E. Wu, T. Kirova, M. Auzins, and Y.-H. Chen, [Optics Express \*\*31\*\*\(22\), 37094\(2023\)](#), DOI:10.1364/OE.502183
4. "Hyperfine Interaction in the Autler-Townes Effect: Control of Two-photon Selection Rules in the Morris-Shore Basis", A. Cinins, D. K. Efimov, M. Bruvelis, K. Miculis, T. Kirova, N. N. Bezuglov, M. Auzins, I. I. Ryabtsev and A. Ekers, [arXiv:2312.02801v1](#), submitted to [Phys. Rev. A](#)
5. "Azimuthal Dependence of Electromagnetically Induced Grating in a Double V-type Atomic System near Plasmonic Nanostructure", S. H. Asadpour, T. Kirova, H. R. Hamed, V. Yannopapas, and E. Paspalakis, [The European Physical Journal Plus \*\*138\*\*, Article number: 246 \(2023\)](#); <https://doi.org/10.1140/epjp/s13360-023-03871-z>
6. "Numerical studies of the impact of the electromagnetic field of radiation on valine" T. Kirova and J. Tamuliene, [Materials \*\*16\*\*\(5\), 1814 \(2023\)](#); <https://doi.org/10.3390/ma16051814>
7. "Fragmentation of tyrosine by high-energy electron impact", J. Tamuliene, T. Kirova, L. Romanova, V. Vukstich, A. Snegursky, [European Physical Journal D, \*\*77\*\* 13 \(2023\)](#), topical issue on "Physics of Ionized Gases and Spectroscopy of Isolated Complex Systems: Fundamentals and Applications", <https://doi.org/10.1140/epjd/s10053-023-00594-9>
8. "High-fidelity quantum control via Autler-Townes splitting", M. Delvecchio, T. Kirova, E. Arimondo, D. Ciampini, and S. Wimberger, [Phys. Rev. A, \*\*106\*\*, 052802 \(2022\)](#), <https://doi.org/10.1103/PhysRevA.106.052802>
9. "Cold Atoms in Space: Community Workshop Summary and Proposed Road-Map", many authors + T. Kirova, outcomes of the COST action CA16221 (2017-2021) "Quantum Technologies with Ultracold Atoms" (AtomQT), [EPJ Quantum Technology \*\*9\*\*, Article number: 30 \(2022\)](#), <https://doi.org/10.1140/epjqt/s40507-022-00147-w>
10. "Two-dimensional Electromagnetically Induced Phase Grating via Composite Vortex Light", S. H. Asadpour, H. R. Hamed, T. Kirova, and E. Paspalakis, [Phys. Rev. A \*\*105\*\* \(4\), 043709 \(2022\)](#), DOI: 10.1103/PhysRevA.105.043709

11. “Azimuthal Modulation of Electromagnetically Induced Grating using Structured Light”, S. H. Asadpour, T. Kirova, J. Qian, H. R. Hamed, G. Juzeliūnas and E. Paspalakis, [Sci. Rep. \*\*11\*\*, 20721 \(2021\)](https://www.nature.com/articles/s41598-021-00141-9), <https://www.nature.com/articles/s41598-021-00141-9>
12. “A Weakly-Interacting Many-Body System of Rydberg Polaritons Based on Electromagnetically Induced Transparency”, B. Kim, K-T. Chen, Sh-S. Hsiao, Sh-Y. Wang, K.-B. Li, J. Ruseckas, G. Juzeliūnas, T. Kirova, M. Auzinsh, Y-Ch. Chen, Y-F. Chen, and I. A. Yu, [Commun. Phys. \*\*4\*\*, 101 \(2021\)](https://doi.org/10.1038/s42005-021-00604-5), <https://doi.org/10.1038/s42005-021-00604-5>, *featured paper*
13. “Ultraprecise Rydberg Atomic Localization using Optical Vortices”, N. Jia, J. Qian, T. Kirova, G. Juzeliūnas, and H. R. Hamed, [Optics Express \*\*28\*\*\(24\), 36936-36952 \(2020\)](https://doi.org/10.1364/OpticsExpress.28.036936)
14. “Strongly Confined Atomic Localization by Rydberg Coherent Population Trapping”, T. Kirova, N. Jia, S. H. Asadpour, J. Qian, G. Juzeliūnas and H. R. Hamed, [Optics Letters \*\*45\*\*\(19\), 5440-5443 \(2020\)](https://doi.org/10.1364/OpticsLetters.45.05440)
15. “Hyperfine Interaction in the Autler-Townes Effect: the Formation of Bright, Dark, and Chameleon States”, T. Kirova, A. Cinins, D. K. Efimov, M. Bruvelis, K. Miculis, N. N. Bezuglov, M. Auzins, I. I. Ryabtsev and A. Ekers, [Phys. Rev. A \*\*96\*\*, 043421 \(2017\)](https://doi.org/10.1103/PhysRevA.96.043421)
16. “Dynamics of Ultracold Polar Molecules in a Microwave Field”, [T. Kirova] and A.V. Avdeenkov, [N. J. Phys. \*\*17\*\*, 045025 \(2015\)](https://doi.org/10.1088/1367-2630/17/4/045025); <https://doi.org/10.1088/1367-2630/17/4/045025>
17. “Quantum Control of the Spin-Orbit Coupling Interaction using the Autler-Townes Effect”, E. H. Ahmed, S. Ingram, T. Kirova, O. Salihoglu, J. Huennekens, J. Qi, Y. Guan and A. M. Lyyra, [Phys. Rev. Lett. \*\*107\*\*, 163601 \(2011\)](https://doi.org/10.1103/PhysRevLett.107.163601)
18. “Electromagnetically Induced Transparency in an Open V-type Molecular System”, A. Lazoudis, T. Kirova, E. H. Ahmed, P. Qi, J. Huennekens, and A. M. Lyyra, [Phys. Rev. A \*\*83\*\*, 063419 \(2011\)](https://doi.org/10.1103/PhysRevA.83.063419)
19. “Electromagnetically Induced Transparency in an Open  $\Lambda$ -type Molecular System”, A. Lazoudis, T. Kirova, E. H. Ahmed, J. Qi, L. Li, and A. M. Lyyra, [Phys. Rev. A \*\*82\*\*, 023812 \(2010\)](https://doi.org/10.1103/PhysRevA.82.023812)
20. “Experimental Observation of the Dependence of Autler-Townes Splitting on the Probe and Coupling Laser Wavenumber Ratio in Doppler Broadened Open Molecular Cascade Systems”, A. Lazoudis, E. Ahmed, L. Li, T. Kirova, P. Qi, A. Hansson, J. Magne, and A. M. Lyyra, [Phys. Rev. A \*\*78\*\*, 043405 \(2008\)](https://doi.org/10.1103/PhysRevA.78.043405)
21. “Measurement of Absolute Transition Dipole Moment Functions of the  $3^1\Pi \rightarrow 1(X)^1\Sigma^+$  and  $3^1\Pi \rightarrow 2(A)^1\Sigma^+$  transitions in NaK using Autler-Townes Spectroscopy and Calibrated Fluorescence”, S. J. Sweeney, E. H. Ahmed, P. Qi, T. Kirova, A.M. Lyyra, and J. Huennekens, [J. Chem. Phys. \*\*129\*\*, 154303 \(2008\)](https://doi.org/10.1063/JCP.129.154303)
22. “Measurement of the Electronic Transition Dipole Moment by Autler-Townes Splitting: Comparison of Three- and Four-Level Excitation Schemes for the Na<sub>2</sub>



$A^1\Sigma_u^+ - X^1\Sigma_g^+$  System”, E. Ahmed, A. Hansson, P. Qi, [T. Kirova](#), A. Lazoudis, S. Kotochigova, A. M. Lyyra, L. Li, J. Qi, and S. Magnier, [J. Chem. Phys. \*\*124\*\*, 084308 \(2006\)](#)

23. “Designing Molecular Eigenstates in a Four-level  $\Lambda$  System”, [T. Kirova](#) and F. C. Spano, [Phys. Rev. A. \*\*71\*\*, 063816 \(2005\)](#)

24. ”Electromagnetically Induced Transparency in Open Molecular Systems”, J. Magnes, E. Ahmed, [T. Kirova](#), A. Lazoudis, A. M. Lyyra, A. Hansson, F. C. Spano, and L. M. Narducci, [submitted to Optics Communications \(2005\); http://su.diva-portal.org/smash/record.jsf?pid=diva2%3A196574&dswid=-7306](#)

25. “Measurement of Transition Dipole Moments in Lithium Dimers Using Electromagnetically Induced Transparency”, J. Qi, F. C. Spano, [T. Kirova](#), A. Lazoudis, J. Magnes, L. Li, L. M. Narducci, R. W. Field, and A. M. Lyyra, [Phys. Rev. Lett. \*\*88\*\*, 173003-1 \(2002\)](#)

## Book Chapters

1. “The Autler-Townes Effect in Molecules: Observations, Theory, and Applications”, E. H. Ahmed, J. Huennekens, [T. Kirova](#), J. Qi, and A. M. Lyyra, invited chapter, [Advances in Atomic, Molecular, and Optical Physics, Volume 61, Chapter 9, p.467](#), edited by E. Arimondo, P. Berman, and Ch. Lin (Elsevier, 2012)

2. “Prospects for All-Optical Alignment and Quantum State Control of Nonpolar Molecules”, A. M. Lyyra, F. C. Spano, J. Qi, and [T. Kirova](#), invited chapter, [ACS Symposium Series, Volume 821](#), “Laser Control and Manipulation of Molecules, edited by A. D. Bandrauk, Y. Fujimura, and R. J. Gordon, pp. 304-319 (2002)

## Manuscripts in Preparation

1.”Visualization of Dark states in Hyperfine Levels of Na via Dynamic Excitation of a Three-level Ladder”, A. Cinins, M. Bruvelis, [T. Kirova](#), K. Miculis, D. K. Efimov, N. N. Bezuglov, and A. Ekers, [in preparation](#)

2. “Determination of Lifetimes of Excited Molecular States using the Autler-Townes Effect”, R. Garcia-Fernandez, A. Ekers, K. Miculis, N. N. Bezuglov, [T. Kirova](#), K. Blushs, M. Auzinsh, K. Bergmann, L. P. Yatsenko, O. Dulieu, M. Aymar, [in preparation](#)

3. “Determination of Branching Ratios of Excited Molecular States using the Autler-Townes Effect”, R. Garcia-Fernandez, A. Ekers, K. Michulis, N. N. Bezuglov, [T. Kirova](#), K. Blushs, M. Auzinsh, K. Bergmann, L. P. Yatsenko, O. Dulieu, M. Aymar, [in preparation](#)

## Conference Proceedings

1.”Numerical Investigations of the Impact of the Magnetic Field of Radiation on Amino Acids”, [T. Kirova](#) and J. Tamuliene, topical invited lecture, Proceedings of the 31 Summer School and International Symposium on the Physics of Ionized Gases

Belgrade (SPIG2022), Serbia, September 5-9, 2022, *Publ. Astron. Obs. Belgrade No. 102* (2022), 26

2."The GENERA network/community of practice and its Work on Mental Health in Physics", T. Kirova, AIP Conf. Proc. 3040, 060004 (2023) <https://doi.org/10.1063/5.0176357>, 7th IUPAP International Conference on Women in Physics, 2021

3."Dynamics of Ultracold Polar Molecules in Microwave Field", T. Kirova and A.V. Avdeenkov, AIP Conference Proceedings, Women in Physics: 4th IUPAP International Conference on Women in Physics, 2013, vol.1517, Atomic and Molecular Physics, p. 206-207; <https://aip.scitation.org/doi/pdf/10.1063/1.4795252>

4."Conditions and Limitations for Resolution of Hyperfine Structure in the Autler Townes Spectra" T. Kirova, A. Ekers, N. N. Bezuglov, I. I. Ryabtsev, M. Auzinsh, and K. Blushs, Proceedings of V International Symposium "Modern Problems of Laser Physics" MPLP 2008, August 24-31, 2008, Novosibirsk, Russia, Ed. by S. N. Bagayev and P. V. Pokasov, Novosibirsk, 2009, p.149-158.

5."Selection of Unresolved Hyperfine States in Atoms and Molecules via Autler-Townes Effect", T. Kirova, A. Ekers, M. Auzinsh, N. N. Bezuglov, and K. Blushs, Proceedings of XIV National Conference "Laser Physics-2007", October 9-12, 2007, Ashtarak, Armenia

6. "Quantum state control using multiple CW lasers", T. Kirova, A. M. Lyyra and F. C. Spano, Conference paper, OSA Trends in Optics and Photonics Series, Volume 97, Pages 389-391, 2004, Conference on Lasers and Electro-Optics/ International Quantum Electronics Conference and Photonic Applications Systems Technologies (CLEO/ IQEC), 21 -26 May 2004, San Francisco, CA, United States; <https://doi.org/10.1364/IQEC.2004.ITu11>

## Invited Talks

1. "Quantum and Nonlinear Optics in Atomic and Molecular Systems", invited talk, March, 2024, University of Ulm, Ulm, Germany

2. "MSCA Staff Exchange project Q-DYNAMO: bridging scientists in quantum optics across the globe", T. Kirova, invited talk, webinar on MSCA Staff Exchange projects involving partners from Japan, 29 November 2023, organized by EURAXESS JAPAN

3."Complex Molecules in Space", T. Kirova, invited talk, March 2023, Department of Physics, Universita degli Studi di Pisa, Pisa, Italy

4."Non-linear phenomena in atomic systems using structured light", T. Kirova, invited talk, December 2021, Department of Physics, Universita degli Studi di Pisa, Pisa, Italy

5. "Non-linear phenomena in quantum systems using structured light", T. Kirova, invited talk, December 2021, Department of Mathematical, Physical and Computer Sciences , Universita di Parma, Parma, Italy
6. "Hyperfine interaction in the Autler-Townes effect: formation of bright, dark, and chameleon states, and control of two-photon selection rules", T. Kirova, invited talk, November 2021, Consiglio Nazionale delle Ricerche, Istituto Nazionale di Ottica "Adrianno Gozzini" (CNR-INO), Pisa, Italy
7. "Ultrahigh-precision Rydberg Atomic Localization using Standing Waves and Optical Vortices", invited talk, October 2021, group of Prof. Claude Leroy, Laboratoire Interdisciplinaire Carnot de Bourgogne, University of Burgundy, Dijon, France
8. "Quantum Effects in the Brain: Review and Future Perspectives" ( in Russian), online presentation, The 20<sup>th</sup> Conference/1st Gestalt Forum of the Riga Gestalt Institute, 9-11 April 2021
9. "Rydberg-Rydberg Interaction Strength and Dipole Blockade Radii in <sup>87</sup>Rb Atoms in the Presence of Förster Resonances", T. Kirova, invited talk, 15th International Workshop "Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light" (CAMEL 15), 16-21 June 2019, Nessebar, Bulgaria
10. "Dipole-Dipole Interaction Strength and Dipole Blockade Radius using Förster Resonances in Rb Atoms", 1 November 2018, Institute of Atomic Physics and Spectroscopy, University of Latvia, Riga, Latvia
11. "Dipole-Dipole Interaction Strength and Dipole Blockade Radius using Förster Resonances in Rb Atoms", T. Kirova, I. I. Beterov, M. Auzinsh, A. Cinins, Y.-H. Chen, and I. A. Yu, 3<sup>rd</sup> workshop on "Quantum and Nonlinear Optics with Rydberg-State Atoms", 14-15 October 2018, Hsinchu, Taiwan
12. "Calculations of Dipole Blockade Radius and Dipole-Dipole Interaction Strength using Förster Resonances in Rb Atoms", 18 May 2017, Institute of Atomic Physics and Spectroscopy, University of Latvia, Riga, Latvia
13. "Calculations of Dipole Blockade Parameters using Förster Resonances in Rb Atoms", 1 May 2017, AMO seminar, National Center for Theoretical Studies, National Tsing Hua University, Hsinchu, Taiwan
14. "Fading of Dark and Chameleon Bright States in the Autler-Townes Spectra of Atomic Nondegenerate Hyperfine Levels", 19 October 2016, Institut de Science et d'Ingénierie Supramoléculaires (ISIS), University of Strasbourg, Strasbourg, France
15. "Selective Excitation of Uncorrelated Sets of Adiabatic States in Non-degenerate Hyperfine Level Systems", March 2016, National Center for Theoretical Studies, National Tsing Hua University, Hsinchu, Taiwan
16. "Latvia-France Partnership Program OSMOZE: "Electromagnetic-field Control of the Blockade/Antiblockade Effect In Rydberg Ensembles", 19 February 2016, Institute of Atomic Physics and Spectroscopy, University of Latvia, Riga, Latvia

17. "Peculiarities of Bright and Dark States Formation in Three-level Ladders of Na Hyperfine Levels", 3<sup>rd</sup> TLL/COLIMA Workshop on manipulation of light by matter and matter by light, 18-19 October 2014, National Center for Theoretical Studies, National Tsing Hua University, Hsinchu, Taiwan
18. "Laser Manipulation of Electromagnetically Induced Transparency in Rydberg Atoms in the Dipole Blockade/Antiblockade Regimes", 3<sup>rd</sup> TLL/COLIMA Workshop on manipulation of light by matter and matter by light, 18-19 October 2012, National Center for Theoretical Studies, National Tsing Hua University, Hsinchu, Taiwan
19. "Coherent Effects in Atomic and Molecular Systems", March, 2014, Institute of Atomic Physics and Spectroscopy, University of Latvia, Riga, Latvia
20. "Formation of Dark States in Hyperfine Levels of Na via Autler-Townes Effect", September 2012, NITheP Seminars, NITheP, Stellenbosch Institute for Advanced Study, Stellenbosch, South Africa
21. "Dynamics of Ultracold Polar Molecules in a Circularly Polarized Microwave Field", March 2012, NITheP Seminars, University of the Witwatersrand (WITS), Johannesburg, South Africa
22. "Dynamics of Ultracold Polar Molecules in Microwave Field", February 2012, NITheP Seminars, University of Kwazulu-Natal (UKZN), Durban, South Africa
23. "Dynamics of Ultracold Polar Molecules in a Microwave Field" September 2010, Laser Centre Seminar, Faculty of Physics and Mathematics, University of Latvia, Riga, Latvia
24. "Coherent Effects in Atomic and Molecular Systems", April 2010, Laser Physics Institute (LRI) Seminars, Department of Physics, Stellenbosch University, Stellenbosch, South Africa
25. "Coherent Effects in Atomic and Molecular Systems", February 2010, NITheP Seminars, NITheP, Stellenbosch Institute for Advanced Study, Stellenbosch, South Africa
26. "Effect of Hyperfine Structure on the Autler-Townes Splitting", September 2008, Laser Centre Seminar, Faculty of Physics and Mathematics, University of Latvia, Riga, Latvia
27. "Molecular Autler-Townes Effect and Spectroscopic Applications", January 2007, School of Chemistry, University of Birmingham, Birmingham, UK
28. "Autler-Townes Effect in Molecular Sodium: Spectroscopic Applications", October 2006, Cold Atoms Group, Niels Bohr Institute, University of Copenhagen, Copenhagen, Denmark
29. "Eigenstate Design in a Molecular Four-level Ladder Scheme", November 2005, Institute of Atomic Physics and Spectroscopy, University of Latvia, Riga, Latvia

30. “Molecular Eigenstate Design in a Four-level Cascade Scheme via Strong Optical Fields”, November 2005, Molecular Physics Division, Department of Physics, Stockholm University, Stockholm, Sweden

## **Workshops Attended**

1. IQST Workshop on Quantum Science and Technology, 3-4 April 2024, University of Ulm, Ulm, Germany, organized by the Quantum Information National Laboratory of Hungary (QNL) and the Center for Integrated Quantum Science and Technology (IQST) Germany
2. “Our Beautiful Minds: An Introduction to Neurodiversity at Work”, webinar, 5.12.2023, organized by “SNAC: supporting neurodiversity at CERN
3. GENERA General Assembly 2023, 24-25 October 2023, hybrid workshop, organized by GENERA network
4. 1<sup>st</sup> Training School of the COST action CA21101 COSY "Multiscale modeling of the properties of compounds: From isolated molecules to 3D materials relevant for industrial and astrophysical applications", 19-22 September, Belgrade, Serbia
5. GENERA workshops in Physics module II: Skills needed to build a (successful) career, 20 April 2023, virtual workshop, organized by GENERA network
6. UniSAFE webinar on ”Setting up and Implementing Institutional Policies to Combat Gender-Based-Violence in Academia-The 7P Framework”, 18, 25 April, and 2 May 2023, organized by UniSAFE project “Ending gender-based violence’
7. UniSAFE webinar on “Create Successful Awareness-raising Campaigns on Gender-Based Violence at Your University”, 28 march 2023, organized by UniSAFE project “Ending gender-based violence’
8. Interdisciplinary Intersectionality in (Theoretical) Physics, online event, 22-24 March 2023, organized by University of Gottingen, Germany
9. GENERA workshops in Physics 1: Segregation, implicit bias and myths-threats to fair Physics careers, 15 December 2022, virtual workshop, organized by GENERA network
10. 1st International Congress on Advanced Computational Modeling of Materials (CAMOM), hybrid meeting, 18-21 September, University of Pretoria, South Africa, organized by the National Institute for Theoretical and Computational Sciences (NITheCS)
11. 3<sup>rd</sup> Annual Workshop of the COST Action Attosecond Chemistry, 19-21 September 2022, Prague, Czech Republic
12. GeDiMIRT: Gender Dimension in Physics and Math-Intensive Research and Teaching, 22-23 June 2022, hybrid meeting, Lund University

13. "Gender Equality Plans (GEPs): training to support the new eligibility criterion for Horizon Europe for organisations in Estonia, Latvia and Lithuania", Latvian team member, 25 May 2022, organized by the European Commission
14. Advanced Research in Quantum Chemistry and Solid State Physics with ORCA, CP2K, TRAVIS, and CP-PAW, online workshop, 7-8 April 2022, organized by Paderborn Center for Parallel Computing (PC2), Germany
15. Workshop series on gender equality and diversity, 15, 22, 29 March 2022, organized by The European Universities of Technology Alliance (ENHANCE)
16. Virtual Winter School on Computational Chemistry, 21-25 February 2022
17. Gender Equality in Higher Education, Research and Innovation: From Institutional Policies to International Cooperation, online event, 10 February 2022, organized by the Mission for Women's Integration at the CNRS (MPDF) within the French presidency of the Council of the European Union
18. Workshop on Cold Rydberg Chemistry, virtual event, 23-24 November 2021, organized by University College London/University of Leipzig
19. Virtual 2<sup>nd</sup> MC meeting of the COST action CA18212 "Molecular Dynamics in Gas Phase" (MD-GAS), 4-8 October 2021, organized by Universidad Autónoma de Madrid, Spain
20. Community Workshop on Cold Atoms in Space, virtual event, 23-24 September 2021, organized by the COST action CA16221 "Quantum Technologies with Ultracold atoms" (AtomQT)
21. ZCAM-COST AttoChem School on New Computational Methods for Attosecond Molecular Processes 2021, (online), 22-26 March 2021
22. Virtual WP1+WP2+MC meeting of the COST Action 18212 "Molecular Dynamics in the GAS-phase" (MD-GAS), 15-19 March 2021
23. Winter school of Experimental Molecular Dynamics and Kinetics, 22-24 February 2021
24. Virtual Winter School on Computational Chemistry, 15-19 February 2021
25. Virtual meeting "Processes in Atmospheric and Astrochemical Environments" PATAS 2021, WP3 meeting of the COST Action 18212 Molecular Dynamics in the GAS-phase (MD-GAS), 18-21 January 2021
26. Virtual Winter School on Strongly Correlated Quantum Matter, 30 November-18 December 2020, organized by the Max Planck Institute for the Physics of Complex Systems (MPIPKS), Dresden, Germany
27. Virtual ERC workshop "Sex and Gender dimension in frontier research", 16 November 2020, organized by the European Research Council

28. 3rd Asia-Pacific Workshop on Trapped Quantum Systems (APTQS 2020), online conference, 28–30 October, 2020, organized by Center for Quantum Information and Quantum Biology (QIQB), Institute for Open and Transdisciplinary Research Initiatives (OTRI), Osaka University, Japan
29. Virtual EMBO | EMBL | HHMI Conference: Gender Roles and their Impact in Academia, 13-15 October 2020
30. "Advancing Equality at Home and Work: Strengthening Science and Collaboration", Work and Family Researchers Network (WFRN) Virtual Conference, 9 October 2020
31. Virtual Madrid meeting of the GENERA network/CoP, 14-15 September 2020
32. Virtual meeting "Quantum Battles in Attoscience", 1-3 July, 2020, organized by University College London, UK
33. Virtual Rome meeting of the GENERA network/CoP, 22-23 April, 2020
34. "E-discussion: Addressing Sexual Harassment in Research Organizations", 16 April 2020, organized by GenPORT
35. MC meeting of COST action CA18212 "Molecular Dynamics in Gas Phase" (MD-GAS), 12 November, 2019, Brussels, Belgium
36. MC meeting for COST action CA16221: "Quantum Technologies with Ultracold Atoms" (AtomQT), 30-31 October, 2019, Sarajevo, Bosnia and Herzegovina
37. Faraday Discussion on "Quantum Effects in Complex Systems", 11-13 September 2019, University of Warwick, Central Campus, Coventry, United Kingdom
38. 15th International Workshop "Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light" (CAMEL 15), 16-21 June 2019, Nessebar, Bulgaria
39. The 3<sup>rd</sup> workshop on "Quantum and Nonlinear Optics with Rydberg-State Atoms", 14-15 October 2018, Hsinchu, Taiwan
40. International Workshop on Atomic Physics, Focus days on "Giant Interactions in Rydberg Systems" GiRyd (DFG Priority Programme 1929), November 26-December 1, 2017, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany (attendance partly supported by GiRyd)
41. 2<sup>nd</sup> TLL Meeting "Quantum and Nonlinear Optics with Rydberg-State Atoms", 10-11 July 2017, Vilnius University, Vilnius
42. 1<sup>st</sup> TLL Meeting "Quantum and Nonlinear Optics with Rydberg-State Atoms", 10-11 November 2016, University of Latvia, Riga
43. 12th International Workshop "Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light" (CAMEL 12), 27 June-1 July 2016, Nessebar, Bulgaria

44. 11th International Workshop “Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light” (CAMEL 11), 14-19 June 2015, Nessebar, Bulgaria
45. TLL/COLIMA 3rd Workshop on manipulation of light by matter and matter by light, 18-19 October 2012, Hsinchu, Taiwan
46. 10th International Workshop “Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light” (CAMEL 10), 23-27 June 2014, Nessebar, Bulgaria
47. International Conference on Collaboration in Space Technologies (ICCST), 5-6 June, 2014, Kipsala hall, Riga, Latvia
48. “Petergof Workshop on Laser Physics” (PWLP 2014), 21-25 April 2014, St. Petersburg State University, Department of Physics, St. Petersburg, Russia
49. International Workshop on Atomic Physics, Focus Days on “Quantum Dynamics in Tailored Intense Fields”, November 25-29, 2013, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
50. 9th International Workshop “Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light” (CAMEL 9), 16-21 June 2013, Nessebar, Bulgaria
51. TLL/COLIMA 1st Workshop on manipulation of light by matter and matter by light, 18-19 July, 2012, University of Latvia, Riga, Latvia
52. 23<sup>rd</sup> Chris Engelbrecht Summer School 2012, “Quantum Biology”, 18-28 January 2011, Salt Rock Hotel, Salt Rock, South Africa
53. International Workshop on Ultracold Molecules, 7-11 November 2011, Stellenbosch Institute for Advanced Studies (STIAS), Stellenbosch, South Africa
54. 7th International Workshop “Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light” (CAMEL 7), 3-9 July 2011, Nessebar, Bulgaria
55. “Equilibration and Equilibrium”, 2nd Stellenbosch Workshop on Statistical Physics, 7-18 March 2011, Stellenbosch Institute for Advanced Studies (STIAS), Stellenbosch, South Africa
56. 22<sup>nd</sup> Chris Engelbrecht Summer School 2011, “The Standard Model of Particle Physics and Beyond”, 19-30 January 2011, Stellenbosch Hotel, Stellenbosch, South Africa
57. International Workshop on Quantum Physics of Low-Dimensional Systems and Materials, 3-7 January 2011, Wallenberg Research Center, Stellenbosch, South Africa
58. Non-equilibrium Quantum Many-Particle Correlated Systems, 4-8 October 2010, Stellenbosch Institute for Advanced Studies (STIAS), Stellenbosch, South Africa
59. 16<sup>th</sup> International School on Quantum Electronics: Laser Physics and Applications, 20-24 September 2010, Nessebar, Bulgaria



60. 21<sup>st</sup> Chris Engelbrecht Summer School on Quantum Optics, 18-27 January 2010, Stellenbosch Institute for Advanced Studies (STIAS), Stellenbosch, South Africa
61. 5th International Workshop “Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light”, (CAMEL 5), 23-28 June 2009, Nessebar, Bulgaria
62. Second Workshop “High Dimensional Quantum Dynamics: Challenges and Opportunities”, February 24-28, 2008, La Grande Motte (Montpellier), France
63. International Workshop on Atomic Physics, Focus Days on “Relativistic Laser-Matter Interaction”, November 27-December 1, 2006, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
64. CCP6 Workshop on Coherent Control of Molecules, July 3-5, 2006, University of Birmingham, Birmingham, UK
65. International Workshop on Atomic Physics, Focus Days on “Electronic Correlation in Atomic and Molecular Dynamics”, November 27-December 2, 2005, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany

## Conference Abstracts

1. “Modified basis sets for molecules in magnetic fields: applications to radiation-induced fragmentation of amino acids”, T. Kirova, J. Tamuliene, L. Romanova, V. Vukstich, and A. Snegursky, Topical lecture, Final Meeting of the COST Action CA 18212 “Molecular Dynamics in the Gas Phase” (MD-GAS), 8-12 April 2024, Hamburg, Germany
2. “Discrimination of leucine and isoleucine via fragmentation by electromagnetic field”, J. Tamuliene and T. Kirova, poster presentation, 5<sup>th</sup> and final workshop of the AttoChem COST Action ( ATTOCHEM TENERIFE 2024), 28 February-1 March, 2024, Tenerife, Spain
3. “Azimuthal Dependence of Electromagnetically Induced Grating in a Double V-type Atomic System near Plasmonic Nanostructure”, S. H. Asadpour, T. Kirova, H. R. Hamed, V. Yannopoulos, and E. Paspalakis, 82<sup>nd</sup> Annual Scientific Conference of the University of Latvia, Section “Atomic physics, optical technologies and medical physics”, 15<sup>th</sup> February 2024, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
4. “Numerical studies of the impact of the electromagnetic field of radiation on valine”, poster presentation, T. Kirova and J. Tamuliene, 82<sup>nd</sup> Annual Scientific Conference of the University of Latvia, Section “Atomic physics, optical technologies and medical physics”, 15<sup>th</sup> February 2024, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
5. “Investigation of Rydberg-Rydberg interaction and blockade radii under Förster resonance”, Ch-E. Wu, T. Kirova, M. Auzins, Y-H. Chen, poster presentation, 24<sup>th</sup>

Annual Meeting of the Physical Society of Taiwan, 24-26 January 2024, National Central University, Taoyuan, Taiwan

6. “Discrimination of leucine and isoleucine via fragmentation by electromagnetic field”, J. Tamuliene and T. Kirova, poster presentation, 45<sup>th</sup> Lithuanian National Physics Conference, 25-17 October, 2023, Vilnius, Lithuania

7. “Fragmentation of tyrosine by high-energy electron impact”, J. Tamuliene, T. Kirova, L. Romanova, V. Vukstich, A. Snegursky, poster presentation, 1<sup>st</sup> Training School of the COST action CA21101 COSY "Multiscale modeling of the properties of compounds: From isolated molecules to 3D materials relevant for industrial and astrophysical applications", 19-22 September 2023, Belgrade, Serbia

8. “Azimuthal Dependence of Electromagnetically Induced Grating in a Double V-type Atomic System near Plasmonic Nanostructure”, S. H. Asadpour, T. Kirova, H. R. Hamed, V. Yannopapas, and E. Paspalakis, 2nd TLL Meeting “*Coherent Optical Control of Atomic Systems*”, 6-9 July 2023, Vilnius, Lithuania

9. “Azimuthal Dependence of Electromagnetically Induced Grating in a Double V-type Atomic System near Plasmonic Nanostructure”, poster presentation, T. Kirova, S. H. Asadpour, H. R. Hamed, V. Yannopapas, and E. Paspalakis, poster presentation, Humboldt Kolleg, 2-6 July 2023, Vilnius, Lithuania

10. “Numerical studies of the impact of the electromagnetic field of radiation on valine”, poster presentation, T. Kirova and J. Tamuliene, 54th edition of the European Group on Atomic Systems (EGAS54), 18-22 June 2023, Strasbourg, France

11. “Azimuthal Dependence of Electromagnetically Induced Grating in a Double V-type Atomic System near Plasmonic Nanostructure”, poster presentation, S. H. Asadpour, T. Kirova, H. R. Hamed, V. Yannopapas, and E. Paspalakis, 54th edition of the European Group on Atomic Systems (EGAS54), 18-22 June 2023, Strasbourg, France

12. “Numerical studies of the impact of the electromagnetic field of radiation on valine” T. Kirova and J. Tamuliene, poster presentation, 81<sup>st</sup> Annual Scientific Conference of the University of Latvia, Section “Atomic physics, optical technologies and medical physics”, 16-17<sup>th</sup> February 2023, Institute of Atomic Physics and Spectroscopy, Riga, Latvia

13. “Structural and optical properties of wurtzite ZnO from first principles” T. Kirova, A. Gulans, and R. Viter, poster presentation, 81<sup>st</sup> Annual Scientific Conference of the University of Latvia, Section “Atomic physics, optical technologies and medical physics”, 16-17<sup>th</sup> February 2023, Institute of Atomic Physics and Spectroscopy, Riga, Latvia

14. “Numerical investigations of the Impact of the Electromagnetic Field of Radiation on Amino Acids”, T. Kirova and J. Tamuliene, progress report, Combined WG2+WG3 meeting of the COST action CA18212 “Molecular Dynamics in Gas Phase” (MD-GAS) “Biomolecular species in different environments”, DEEP-GAS 2022 “Dynamics of Energetic & Electronic Processes in molecules and clusters in the GAS phase, 4-7 October 2022, Madrid, Spain

15. "Numerical investigations of the Impact of the Magnetic Field of Radiation on Amino Acids", T. Kirova and J. Tamuliene, 31<sup>st</sup> Summer School and International symposium on Ionized Gases (SPIG 31), 5-9 September 2022, Belgrade, Serbia
16. "Azimuthal Modulation of Electromagnetically Induced Grating using Structured Light", S. H. Asadpour, T. Kirova, invited talk, 17<sup>th</sup> International Workshop "Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light" (CAMEL 17), 29 August-2 September 2022, Nessebar, Bulgaria
17. "Azimuthal Modulation of Electromagnetically Induced Grating using Structured Light", S. H. Asadpour, T. Kirova, J. Qian, H. R. Hamedi, G. Juzeliūnas and E. Paspalakis, 1st TLL Meeting "*Coherent Optical Control of Atomic Systems*", 7-9 July 2022, University of Latvia, Riga, Latvia
18. "Azimuthal Modulation of Electromagnetically Induced Grating using Structured Light", S. H. Asadpour, T. Kirova, J. Qian, H. R. Hamedi, G. Juzeliūnas and E. Paspalakis, poster presentation, 14th European Conference on Atoms Molecules and Photons (ECAMP 14), 27 June-1 July 2022, Vilnius, Lithuania
19. "Theoretical and Numerical Studies of the Impact of the Magnetic Field of Radiation on Amino Acids", T. Kirova and J. Tamuliene, 80<sup>th</sup> Annual Scientific Conference of the University of Latvia, Section "Atomic physics, optical technologies and medical physics", 11<sup>th</sup> February 2022, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
20. "Azimuthal Modulation of Electromagnetically Induced Grating using Structured Light", S. H. Asadpour, T. Kirova, J. Qian, H. R. Hamedi, G. Juzeliūnas and E. Paspalakis, poster presentation, Quantum Optics and Information Meeting "KOBIT-6", online meeting, 3-4 February 2022, Turkey
21. "Theoretical and Numerical Studies of the Impact of the Magnetic Field of Radiation on Amino Acids", T. Kirova and J. Tamuliene, poster presentation, 44<sup>th</sup> Lithuanian National Physics Conference, 6-8 October 2021, Vilnius, Lithuania
22. "Ultrahigh-precision Rydberg atomic localization using standing waves and optical vortices", T. Kirova, N. Jia, H. R. Hamedi, S. H. Asadpour, J. Qian, and G. Juzeliūnas, oral presentation, 44<sup>th</sup> Lithuanian National Physics Conference, 6-8 October 2021, Vilnius, Lithuania
23. "Theoretical and Numerical Studies of the Impact of the Magnetic Field of Radiation on Amino Acids", T. Kirova and J. Tamuliene, poster presentation Virtual MC meeting of COST action CA18212 "Molecular Dynamics in Gas Phase" (MD-Gas), 4-8 October 2021, organized by Universidad Autónoma de Madrid, Spain
24. "Ultraprecise Rydberg Atomic Localization by Standing Waves and Optical Vortices", T. Kirova, N. Jia, H. R. Hamedi, S. H. Asadpour, J. Qian, and G. Juzeliūnas, poster presentation, 23rd conference school "Advanced Materials and Technologies", 23-27 August 2021, Palanga, Lithuania
25. "Ultraprecise Rydberg Atomic Localization using Standing Waves and Optical Vortices", T. Kirova, N. Jia, H. R. Hamedi, S. H. Asadpour, J. Qian, and G.

Juzeliūnas, poster presentation, Virtual International Conference on Photonic, Atomic and Electronic Collisions, ViCPEAC, 20-23 July 2021, Canada

26."Mental Health Issues in Academia", T. Kirova and D. Boncioli, 7th IUPAP International Conference on Women in Physics, virtual event, 11-15 July 2021, Australia

27."Ultraprecise Rydberg Atomic Localization by Standing Waves and Optical Vortices", T. Kirova, N. Jia, H. R. Hamedi, S. H. Asadpour, J. Qian, and G. Juzeliūnas, poster presentation, Virtual 52<sup>nd</sup> Conference of the European Group on Atomic Systems ( VI-EGAS 52), 5-9 July 2021, Zagreb, Croatia

28."Ultrahigh-precision Rydberg Atomic Localization using Standing Waves and Optical Vortices", T. Kirova, N. Jia, H. R. Hamedi, S. H. Asadpour, J. Qian, and G. Juzeliūnas, short talk, Quantum Optics and Information Meeting "KOBIT-5", online meeting, 22-23 April 2021, organized by Ankara University, Turkey

29."Azimuthal modulation of Electromagnetically Induced Grating in a three-level Lambda atomic system", S. H. Asadpour, H. R. Hamedi, T. Kirova, J. Qian, A. Mekys, G. Juzeliūnas and E. Paspalakis, 79<sup>th</sup> Annual Scientific Conference of the University of Latvia, Section "Atomic physics, optical technologies and medical physics", 12<sup>th</sup> February 2021, Institute of Atomic Physics and Spectroscopy, Riga, Latvia

30."Single Photon Technologies using Rydberg Atoms", T. Kirova, poster presentation, online meeting, 3rd International Symposium on "Single Photon based Quantum Technologies", 15-17 September 2020, organized by PicoQuant, Berlin, Germany

31."Atom localization using Rydberg-EIT/CPT with spatially dependent fields", T. Kirova, N. Jia, S. H. Asadpour, J. Qian, H. R. Hamedi and G. Juzeliūnas, 22<sup>nd</sup> conference school "Advanced Materials and Technologies", 24-28 August 2020, Palanga, Lithuania

32."Atom localization using Rydberg-EIT/CPT with spatially dependent fields", T. Kirova, N. Jia, S. H. Asadpour, J. Qian, H. R. Hamedi and G. Juzeliūnas, poster presentation, Quantum Optics and Information Meeting "KOBIT-4", online meeting, 14-15 May 2020, organized by University of Izmir, Turkey

33."Quantum Control of the Spin-Orbit Coupling Interaction using the Autler-Townes Effect", E. H. Ahmed, S. Ingram, T. Kirova, O. Salihoglu, J. Huennekens, J. Qi, Y. Guan and A. M. Lyyra, 1st Annual Meeting of the MD-GAS (Molecular Dynamics in the GAS-phase) COST Action 18212, poster presentation, 18-24 February 2020, Caen, France

34."Atom localization using Rydberg-EIT/CPT with spatially dependent fields", T. Kirova, N. Jia, S. H. Asadpour, J. Qian, H. R. Hamedi and G. Juzeliūnas, poster presentation, 78<sup>th</sup> Annual Scientific Conference of the University of Latvia, Section "Atomic physics, optical technologies and medical physics", 14<sup>th</sup> February 2020, Institute of Atomic Physics and Spectroscopy, Riga, Latvia

35. "Rydberg-Rydberg Interaction Strength and Dipole Blockade Radius in  $^{87}\text{Rb}$  Atoms in the Presence of Förster Resonances", T. Kirova, invited talk, 15th International Workshop "Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light" (CAMEL 15), 16-21 June 2019, Nessebar, Bulgaria
36. "Dipole-Dipole Interaction Strength and Dipole Blockade Radius using Förster Resonances in Rb Atoms", T. Kirova, M. Auzins, I. I. Beterov, A. Cinins, Y.-H. Chen, and I. A. Yu, poster presentation, 77<sup>th</sup> Annual Scientific Conference of the University of Latvia, Section "Atomic physics, optical technologies and medical physics", 16<sup>th</sup> February 2019, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
37. "Transit relaxation effect on Rydberg-EIT spectra in thermal  $^{87}\text{Rb}$  vapor", A. Cinins, T. Kirova, M. Auzinsh, Y.-H. Chen, and I. A. Yu, poster presentation, 77<sup>th</sup> Annual Scientific Conference of the University of Latvia, Section "Atomic physics, optical technologies and medical physics", 16<sup>th</sup> February 2019, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
38. "Dipole-Dipole Interaction Strength and Dipole Blockade Radius using Förster Resonances in Rb Atoms", T. Kirova, I. I. Beterov, M. Auzins, A. Cinins, Y.-H. Chen, and I. A. Yu, 3<sup>rd</sup> TLL Meeting "Quantum and Nonlinear Optics with Rydberg-State Atoms", 14-15 October 2018, Hsinchu, Taiwan
39. "Analysis of Rydberg-EIT with room temperature  $^{87}\text{Rb}$  atoms", A. Cinins, T. Kirova, M. Auzinsh, 3<sup>rd</sup> TLL Meeting "Quantum and Nonlinear Optics with Rydberg-State Atoms", 14-15 October 2018, Hsinchu, Taiwan
40. "Dipole-Dipole Interaction Strength and Dipole Blockade Radius using Förster Resonances in Rb Atoms", T. Kirova, M. Auzins, I. I. Beterov, A. Cinins, Y.-H. Chen, and I. A. Yu, poster presentation, Humboldt Kolleg "Controlling quantum matter: From ultracold atoms to solids" 29 July -2 August 2018, Vilnius, Lithuania
41. "Transit relaxation effect on Rydberg-EIT spectra in thermal  $^{87}\text{Rb}$  vapor", A. Cinins, T. Kirova, M. Auzinsh, Y.-H. Chen, and I. A. Yu, poster presentation, Humboldt Kolleg "Controlling quantum matter: From ultracold atoms to solids" 29 July -2 August 2018, Vilnius, Lithuania
42. "Dipole-Dipole Interaction Strength and Dipole Blockade Radius using Förster Resonances in Rb Atoms", T. Kirova, M. Auzins, I. I. Beterov, A. Cinins, Y.-H. Chen, I. A. Yu, poster presentation, EGAS 50, 9-13 July 2018, Krakow, Poland
43. "Calculations of Dipole-Dipole Interaction Strength and Dipole Blockade Radius using Förster Resonances in Rb Atoms", T. Kirova, I. I. Beterov, M. Auzins and I. A. Yu, poster presentation, 76<sup>th</sup> Annual Scientific Conference of the University of Latvia, Section "Atomic physics, optical technologies and medical physics", 16<sup>th</sup> February 2018, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
44. "Theoretical study of Rydberg-EIT in thermal Rb atoms", A. Cinins, T. Kirova, M. Auzinsh, Y. H. Chen, I. A. Yu, poster presentation, 76<sup>th</sup> Annual Scientific Conference of the University of Latvia, Section "Atomic physics, optical technologies and medical physics", 16<sup>th</sup> February 2018, Institute of Atomic Physics and Spectroscopy, Riga, Latvia

45. "Calculations of Dipole-Dipole Interaction Strength and Dipole Blockade Radius using Förster Resonances in Rb Atoms", T. Kirova, I. I. Beterov, M. Auzins and I. A. Yu, poster presentation, International Workshop on Atomic Physics, Focus days on "Giant Interactions in Rydberg Systems" GiRyd (DFG Priority Programme 1929) , November 26-December 1, 2017, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany (attendance partly supported by GiRyd)
- 46."Theoretical Studies of Dipole Blockade Parameters using Förster Resonances in Rb Atoms", T. Kirova, A. Cinins, M. Auzins, I. A. Yu, poster presentation, EGAS 49, 17-21 July 2017, Durham, UK
- 47."Theoretical Study of Rydberg-EIT in Thermal Rb atoms", A. Cinins, T. Kirova, M. Auzinsh, Y. H. Chen, I. A. Yu, poster presentation, EGAS 49, 17-21 July 2017, Durham, UK
- 48."Rydberg-Rydberg Interaction Strength and Dipole Blockade Radius in Rb Atoms in the Presence of Förster Resonances", T. Kirova, I. I. Beterov, A. Cinins, M. Auzins, Y.-H. Chen and I. A. Yu, 2<sup>nd</sup> TLL Meeting "*Quantum and Nonlinear Optics with Rydberg-State Atoms*", 10-11 July 2017, Vilnius University, Vilnius
- 49."Calculations of Dipole Blockade Parameters using Förster Resonances in Rb Atoms", T. Kirova, A. Cinins, M. Auzins, I. A. Yu, poster presentation, International Conference on Laser Spectroscopy (ICOLS), 2-8 July 2017, Palais des Congres, Arcachon, France
- 50."Trilateral Grant of the Latvian, Lithuanian, and Taiwanese Research Councils "Quantum and Nonlinear Optics with Rydberg-State Atoms": First Year Achievements", T. Kirova, A. Cinins, M. Auzinsh and I. A. Yu, poster presentation, 2<sup>nd</sup> FOTONIKA\_LV conference "Achievements and Future Prospects", 23-25 April 2017, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
- 51."Latvia-France Partnership Program OSMOZE "Electromagnetic-field Control of the Blockade/Antiblockade Effect In Rydberg Ensembles": First Year Achievements, T. Kirova, A. Cinins, N.-K. Sandor, G. Pupillo, poster presentation, 2<sup>nd</sup> FOTONIKA\_LV conference "Achievements and Future Prospects", 23-25 April 2017, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
52. "Selective Excitation of Uncorrelated Sets of Adiabatic States in Non-degenerate Hyperfine Level Systems", T. Kirova, A. Cinins, M. Bruvelis, D. K. Efimov, K. Miculis, N. N. Bezuglov, M. Auzinsh, A. Ekers, poster presentation, 2<sup>nd</sup> FOTONIKA\_LV conference "Achievements and Future Prospects", 23-25 April 2017, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
- 53."Selective Excitation of Uncorrelated Sets of Adiabatic States in Non-degenerate Hyperfine Level Systems", T. Kirova, A. Cinins, M. Bruvelis, D. K. Efimov, K. Miculis, N. N. Bezuglov, M. Auzinsh, A. Ekers, 75<sup>th</sup> Annual Scientific Conference of the University of Latvia, ASI/AI section, 10<sup>th</sup> February 2017, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
- 54."Numerical Modeling of EIT in Hot Rydberg Gasses", A. Cinins, M. Auzins, T. Kirova, I. A. Yu, 1<sup>st</sup> TLL Meeting "Quantum and Nonlinear Optics with Rydberg-

State Atoms”, 10-11 November 2016, University of Latvia, Riga

55. “Theoretical Studies of Dipole Blockade Parameters using Förster Resonances in Rb Atoms”, T. Kirova, A. Cinins, M. Auzins, I. A. Yu, 1<sup>st</sup> TLL Meeting “Quantum and Nonlinear Optics with Rydberg-State Atoms”, 10-11 November 2016, University of Latvia, Riga

56. “Selective Excitation of Uncorrelated Sets of Adiabatic States in Non-degenerate Hyperfine Level Systems”, T. Kirova, A. Cinins, M. Bruvelis, D. K. Efimov, K. Miculis, N. N. Bezuglov, M. Auzinsh, A. Ekers, ECAMP 12, 5-9 September, 2016, Frankfurt am Main, Germany

57. “Quantum and Nonlinear Optics with Rydberg-State Atoms”, T. Kirova, A. Cinins, M. Auzinsh and I. A. Yu, 74<sup>th</sup> Annual Scientific Conference of the University of Latvia, Natural Sciences, Photonics section, 4<sup>th</sup> March 2016, Riga Photonics Centre, Institute of Atomic Spectroscopy, Riga, Latvia

58. “Latvia-France Partnership Program OSMOZE: “Electromagnetic-field Control of the Blockade/Antiblockade Effect In Rydberg Ensembles”, T. Kirova, A. Cinins, N.-K. Sandor, G. Pupillo, poster presentation, 4<sup>th</sup> March 2016, Riga Photonics Centre, Institute of Atomic Spectroscopy, Riga, Latvia

59. “Laser Manipulation of Electromagnetically Induced Transparency in Rydberg Atoms in the Dipole Blockade Regime”, poster presentation, T. Kirova, M. Auzinsh and I. A. Yu, 74<sup>th</sup> Annual Scientific Conference of the University of Latvia, Natural Sciences, 12 February 2016, Riga Photonics Centre, Institute of Atomic Physics and Spectroscopy, Riga, Latvia

60. “Consequences of Multiple Dressed States Formation in Atomic Nondegenerate Hyperfine Levels”, T. Kirova, 11<sup>th</sup> International Workshop “Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light” (CAMEL 11), 14-19 June 2015, Nessebar, Bulgaria

61. “Consequences of Multiple Dressed States Formation in Atomic Nondegenerate Hyperfine Levels” T. Kirova, A. Cinins, M. Bruvelis, D. K. Efimov, K. Miculis, N. N. Bezuglov, A. Ekers, M. Auzins, and I. I. Ryabtsev, 1<sup>st</sup> FOTONIKA\_LV conference: Achievements and Future prospects”, 23-24 April, 2015, Latvian Academy of Sciences, Riga, Latvia

62. “Manifestation of Multiple Dressed States in Hyperfine Levels of Na: the Death of Dark and some Bright Components in Autler-Townes Spectra”, T. Kirova, D. K. Efimov, K. Miculis, E. Stegenburgs, M. Bruvelis, A. Cinins, N. N. Bezuglov, I. I. Ryabtsev, A. Ekers, 73<sup>rd</sup> Annual Scientific Conference of the University of Latvia, Natural Sciences, Photonics section, 6 February 2015, Riga Photonics Centre, Institute of Atomic Physics and Spectroscopy, Riga, Latvia

63. “Nonlinear optical pumping of a slow and cold Cs beam”, N. N. Bezuglov, T. Kirova, A. Ekers, N. Porfido, S. Birindelli, F. Tantussi, F. Fuso, poster presentation, 73<sup>rd</sup> Annual Scientific Conference of the University of Latvia, Natural Sciences, Photonics section, 6 February 2015, Riga Photonics Centre, Institute of Atomic Physics and Spectroscopy, Riga, Latvia

64. "Coherent population switching in cold sodium atoms", A. Cinins, M. Bruvelis, T. Kirova, N. N. Bezuglov, A. Ekers, 73<sup>rd</sup> Annual Scientific Conference of the University of Latvia, Natural Sciences, Astrospectroscopy, atomic, molecular and optical physics section, 5 February 2015, Faculty of Physics and Mathematics, Riga, Latvia
65. "Peculiarities of Bright and Dark States Formation in Three-level Ladders of Na Hyperfine Levels", T. Kirova, N. N. Bezuglov, D. K. Efimov, K. Miculis, M. Bruvelis, A. Cinins, E. Stegenburgs, A. Ekers, M. Auzinsh, and I. I. Ryabtsev, 3<sup>rd</sup> TLL/COLIMA Workshop on manipulation of light by matter and matter by light, 18-19 October 2014, Hsinchu, Taiwan
66. "Laser Manipulation of Electromagnetically Induced Transparency in Rydberg Atoms in the Dipole Blockade/Antiblockade Regimes", T. Kirova, and A. Ekers, 3<sup>rd</sup> TLL/COLIMA Workshop on manipulation of light by matter and matter by light, 18-19 October 2014, Hsinchu, Taiwan
67. "Peculiarities of Bright and Dark States Formation in Three-level Ladders of Na Hyperfine Levels", T. Kirova, E. Stegenburgs, M. Bruvelis, A. Cinins, K. Miculis, A. Ekers, M. Auzinsh, D. K. Efimov, N. N. Bezuglov, and I. I. Ryabtsev, 10<sup>th</sup> International Workshop "Control of Quantum Dynamics of Atoms, of notMolecules and Ensembles by Light" (CAMEL 10), 23-27 June 2014, Nessebar, Bulgaria
68. "Formation of Multiple Dressed States in Hyperfine Level Systems of Na", T. Kirova, M. Bruvelis, A. Cinins, K. Miculis, A. Ekers, L. Kalvans, M. Auzinsh, D. K. Efimov, N. N. Bezuglov, and I. I. Ryabtsev, Petergof Workshop on Laser Physics (PWLP 2014), 21-25 April 2014, St. Petersburg State University, Department of Physics, St. Petersburg, Russia
69. "Quantum State Manipulation using Strong Light-Matter Interaction", M. Bruvelis, T. Kirova, A. Cinins, K. Michulis, D. K. Efimov, M. Auzinsh, N. N. Bezuglov, A. Ekers, Petergof Workshop on Laser Physics (PWLP 2014), 21-25 April 2014, St. Petersburg State University, Department of Physics, St. Petersburg, Russia
70. "Peculiarities of the Formation of Bright and Dark States at Hyperfine  $3D_{3/2}$  and  $3D_{5/2}$  Levels of Sodium", T. Kirova, N. N. Bezuglov, M. Bruvelis, A. Cinins, D. Efimov, A. Ekers, 72<sup>nd</sup> Annual Scientific Conference of the University of Latvia, Natural Sciences, Photonics section, 7 February 2014, Riga Photonics Centre, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
71. "Laser Manipulation of Quantum States", A. Ekers, N. Bezuglov, K. Miculis, T. Kirova, M. Bruvelis, D. Efimov, C. Andreeva, M. Auzinsh, 72<sup>nd</sup> Annual Scientific Conference of the University of Latvia, Natural Sciences, Photonics section, 7 February 2014, Riga Photonics Centre, Institute of Atomic Physics and Spectroscopy, Riga, Latvia
72. "Experimental Observation of the Formation of Multiple Dressed States in Hyperfine Level Systems of Sodium", E. Stegenburgs, A. Leitis, A. Cinins, M. Bruvelis, D. K. Efimov, N. N. Bezuglov, A. Ekers, T. Kirova, poster presentation, 72<sup>nd</sup> Annual Scientific Conference of the University of Latvia, Natural Sciences, Photonics section, 7 February 2014, Riga Photonics Centre, Institute of Atomic Physics and Spectroscopy, Riga, Latvia



73."Formation of Multiple Dressed States in Hyperfine Level Systems of Na", T. Kirova , N. Bezuglov, K. Miculis, D. K. Efimov, M. Bruvelis, A. Cinins, A. Ekers, L. Kalvans, M. Auzinsh, and I. I. Ryabtsev, poster presentation, International Workshop on Atomic Physics, focus days on "Quantum Dynamics in Tailored Intense Fields", November 25-29, 2013, Dresden, Germany

74."Formation of Multiple Dressed States in Hyperfine Level Systems of Na",M. Bruvelis, T. Kirova, N. Bezuglov, A. Cinins, K. Miculis, A. Ekers, L. Kalvans, M. Auzinsh, D. K. Efimov, I. I. Ryabtsev, TLL/COLIMA 2 st Workshop on manipulation of light by matter and matter by light, 1-5 September, 2013, Vilnius, Lithuania

75."Formation of Multiple Dressed States in Hyperfine Level Systems of Na", A. Cinins, T. Kirova, N. Bezuglov, M. Bruvelis, K. Miculis, A. Ekers, L. Kalvans, M. Auzinsh, D. K. Efimov, I. I. Ryabtsev, poster presentation, 11th meeting of ECAMP, 24-28 June 2013, Aarhus, Denmark

76."Nonlinear Optical Pumping of a Slow and Cold Cs Beam", T.Kirova, 9<sup>th</sup> International Workshop "Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light" (CAMEL 9), 16-21 June 2013, Nessebar, Bulgaria

77."Dynamics of Ultracold Polar Molecules in a Circularly Polarized Microwave Field", T. Kirova and A.V. Avdeenkov, International meeting: "The role and applications of collision processes in different kinds of plasmas and laser beams", 22-24 April 2013, St. Petersburg State University, Department of Physics, St. Petersburg, Russia

78."Manifestation of Dark State Formation in Na Hyperfine Level System", D. Efimov, N. N. Bezuglov, J. Ulmanis, M. Bruvelis, K. Miculis, T. Kirova, and A. Ekers, poster presentation, 71<sup>st</sup> Annual Scientific Conference of the University of Latvia, Natural Sciences, Photonics section, 14 February 2013, Riga Photonics Centre, Institute of Atomic Physics and Spectroscopy, Riga, Latvia

79."Dynamics of Ultracold Polar Molecules in a Circularly Polarized Microwave Field", T. Kirova and A. V. Avdeenkov, 71<sup>st</sup> Annual Scientific Conference of the University of Latvia, Natural Sciences, Photonics section, 1 February 2013, Riga Photonics Centre, Institute of Atomic Physics and Spectroscopy, Riga, Latvia

80. "Laser Manipulation of Adiabatic States and its Application towards Resolution of Hyperfine Structure and Population Switching" M. Bruvelis, N. Bezuglov, K. Miculis, T. Kirova, D. K. Efimov, C. Andreeva, A. Cinins, and A. Ekers, 18-23 November 2012, Cold and Ultracold Molecules (ESF Conference in Partnership with LFUI), Universitätszentrum Obergurgl, Austria

81."Dark State Formation in Three-Level Ladder System in Na Supersonic Atomic Beam", D. Efimov, N. N. Bezuglov, J. Ulmanis, M. Bruvelis, K. Miculis, T. Kirova, and A. Ekers, poster presentation, 17<sup>th</sup> International School on Quantum Electronics: Laser Physics and Applications", 24-28 September 2012, Nessebar, Bulgaria

- 82."Manifestation of Dark State Formation in Na Hyperfine Level System", D. Efimov, N. N. Bezuglov, J. Ulmanis, M. Bruvelis, K. Miculis, T. Kirova, and A. Ekers, "Quantum Africa 2", 3-7 September 2012, Drakensberg, South Africa
- 83."Applications of Laser Manipulation of Adiabatic States", A. Ekers, N. Bezuglov, K. Miculis, T. Kirova, M. Bruvelis, D. Efimov, C. Andreeva, A. Cinins, L. Kalvans, M. Auzinsh, 1st International Conference "Photonics Technologies-Riga 2012", 27-28 August 2012, Riga, Latvia
- 84."Effects of Dark State Formation in the Hyperfine Excitation Spectra of Na atoms", D. Efimov, N. N. Bezuglov, J. Ulmanis, M. Bruvelis, K. Miculis, T. Kirova, and A. Ekers, poster presentation, 23<sup>rd</sup> meeting of ICAP, 23-27 July 2012, Paris, France
- 85."Dynamics of Ultracold Polar Molecules in a Circularly Polarized Microwave Field", T. Kirova and A.V. Avdeenkov, TLL/COLIMA 1st Workshop on manipulation of light by matter and matter by light, 18-19 July, 2012, University of Latvia, Riga, Latvia
- 86."Applications of Laser Manipulation of Adiabatic States", A. Ekers, N. N. Bezuglov, K. Miculis, T. Kirova, M. Bruvelis, D. K. Efimov, C. Andreeva, A. Cinins, L. Kalvans, M. Auzinsh, 1<sup>st</sup> TLL/COLIMA Joint Workshop on manipulation of light by matter and matter by light, p. 7, 18-19 July, 2012, University of Latvia, Riga, Latvia
- 87."Manifestation of Dark State Formation in Na Hyperfine Level System", D. Efimov, N. N. Bezuglov, J. Ulmanis, M. Bruvelis, K. Miculis, T. Kirova, and A. Ekers, poster presentation, 44<sup>th</sup> meeting of EGAS, 9-13 July 2012, Gotheborg, Sweden
- 88."Temporal Evolution of Ultracold Polar Molecules in Circularly Polarized Microwave Field", T. Kirova and A. V. Avdeenkov, poster presentation, 7<sup>th</sup> International Workshop "Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light" (CAMEL 7), 3-9 July 2011, Nessebar, Bulgaria
- 89."Temporal evolution of ultracold polar molecules in circularly polarized microwave field", A.V. Avdeenkov and T. Kirova, 43<sup>rd</sup> meeting of EGAS, 28 June-2 July, 2011, Fribourg, Switzerland
- 90."Interference of Laser-Dressed States in the Autler-Townes Effect", J. Ulmanis, M. Bruvelis, N. N. Bezuglov, K. Miculis, C. Andreeva, T. Kirova, A. Ekers, I. I. Ryabtsev, poster presentation, 43<sup>rd</sup> meeting of EGAS, 28 June-2 July, 2011, Fribourg, Switzerland
- 91."Creation of Dark States in the Autler-Townes Spectrum of Na Hyperfine Levels", T. Kirova, N. N. Bezuglov, A. Ekers, I. I. Ryabtsev, M. Auzinsh, and K. Blushs, poster presentation, 43<sup>rd</sup> meeting of EGAS, 28 June-2 July, 2011, Fribourg, Switzerland
- 92."Electromagnetically Induced Transparency in an Open V-type Molecular System", A. Lazoudis, T. Kirova, E. H. Ahmed, P. Qi, J. Huennekens, and A. M. Lyyra, poster presentation, 42<sup>nd</sup> Meeting of DAMOP, June 13-17, 2011, Atlanta, Georgia, USA

93. "Dynamics of Ultracold Polar Molecules in a Microwave Field", T. Kirova and A.V. Avdeenkov, poster presentation, 4th IUPAP International Conference on Women in Physics (ICWIP 2011), 5-8 April 2011, Stellenbosch, South Africa
94. "Control of Molecular Singlet-Triplet State Character using the Autler-Townes Effect", E. H. Ahmed, S. Ingram, T. Kirova, O. Salihoglu, Y. Guan, J. Huennekens, and A. M. Lyyra, 55<sup>th</sup> Annual Conference of the South Africa Institute of Physics (SAIP), 26 September-1 October, 2010, Pretoria, South Africa
95. "Control of Molecular Singlet-Triplet State Character using the Autler-Townes Effect", E. H. Ahmed, S. Ingram, T. Kirova, O. Salihoglu, Y. Guan, J. Huennekens, and A. M. Lyyra, poster presentation, 16<sup>th</sup> International School on Quantum Electronics: Laser Physics and Applications", 20-24 September 2010, Nessebar, Bulgaria
96. "The Förster resonance and Stochastic Dynamics of an Alkali Atom in Microwave Field", D. Efimov, T. Kirova, N. Bezuglov, A. Klucharev, A. Ekers, poster presentation, 16<sup>th</sup> International School on Quantum Electronics: Laser Physics and Applications", 20-24 September 2010, Nessebar, Bulgaria
97. "Dynamics of Ultracold Polar Molecules in a Microwave Field", T. Kirova and A.V. Avdeenkov, poster presentation, 22<sup>nd</sup> Meeting of ICAP (International Conference on Atomic Physics), 25-30 July 2010, Cairns, Australia
98. "Quantum Control of the Spin-Orbit Coupling Interaction using the AC Stark Effect", E. H. Ahmed, S. Ingram, T. Kirova, O. Salihoglu, Y. Guan, J. Huennekens, and A. M. Lyyra, poster presentation, 41<sup>st</sup> Meeting of DAMOP, May 25-29, 2010, Houston, Texas, USA
99. "Electromagnetically Induced Transparency in a  $\Lambda$ -type Molecular System", A. Lazoudis, L. Li, T. Kirova, J. Qi, E. H. Ahmed, and A. M. Lyyra, poster presentation, 41<sup>st</sup> Meeting of DAMOP, May 25-29, 2010, Houston, Texas, USA
100. "Formation of Dark States in Hyperfine Level Systems of Na via the Autler-Townes Effect", T. Kirova, N. N. Bezuglov, A. Ekers, I. I. Ryabtsev, M. Auzinsh, and K. Blushs, poster presentation, 41<sup>st</sup> meeting of EGAS, 8-11 July, 2009, Gdansk, Poland
101. "Autler-Townes Effect: Line-Shape Analysis and Determination of Excited State Lifetimes", A. Ekers, N.N. Bezuglov, K. Miculis, T. Kirova, K. Blushs, M. Auzinsh, R. Garcia-Fernandez, O. Dulieu, M. Aymar, poster presentation, 41<sup>st</sup> meeting of EGAS, 8-11 July, 2009, Gdansk, Poland
102. "Effect of hyperfine structure on the Autler-Townes splitting" T. Kirova, A. Ekers, N. N. Bezuglov, I. I. Ryabtsev, M. Auzinsh and K. Blushs, poster presentation, Fifth International Symposium "Modern Problems of Laser Physics" 2008, 24-30 August 2008, Novosibirsk, Russia
103. "Effects of Hyperfine Structure on the Autler-Townes", T. Kirova, A. Ekers, N. N. Bezuglov, I. I. Ryabtsev, K. Blushs, and M. Auzinsh, poster presentation, 40<sup>th</sup> Meeting of EGAS, 2-5 July, 2008, Graz, Austria

104. "Resolution of Hyperfine Structure in the Autler-Townes Effect", T. Kirova, A. Ekers, N. Bezuglov, I. Ryabtsev, M. Auzinsh, and K. Blushs, International conference "Advances in Atomic and Molecular Physics 2008", June 16-18, 2008, Ratnieki, Latvia
105. "All-Optical Control of Quantum State Singlet-Triplet Character by Autler-Townes Splitting", O. Salihoglu, P. Qi, S. Ingram, T. Kirova, E. Ahmed, F. Spano and M. Lyyra, poster presentation, 39<sup>th</sup> Meeting of DAMOP, May 27-31, 2008, State College, PA, USA
106. "Effects of Hyperfine Structure on the Autler-Townes", T. Kirova, A. Ekers, N. N. Bezuglov, I. I. Ryabtsev, K. Blushs, and M. Auzinsh, poster presentation, Workshop on Rydberg Excited Atoms, May 14-16, 2008, Sandbjerg Estate, Denmark
107. "Effect of Hyperfine Structure on the Autler-Townes Splitting in Atomic and Molecular Ladder Excitation Schemes", T. Kirova, A. Ekers, I. I. Ryabtsev, M. Auzinsh, and K. Blushs, poster presentation, 2<sup>nd</sup> Workshop on High Dimensional Quantum Dynamics: Challenges and Opportunities, February 24-28, 2008, La Grande Motte (Montpellier), France
108. "Selection of Unresolved Hyperfine States in Atoms and Molecules via Autler-Townes Effect", T. Kirova, A. Ekers, M. Auzinsh, N. N. Bezuglov, and K. Blushs, XIV National Conference "Laser Physics-2007", October 9-12, 2007, Ashtarak, Armenia
109. "Selection of Unresolved Hyperfine States of Molecules using the Autler-Townes Effect", T. Kirova, A. Ekers, M. Auzinsh, N. N. Bezuglov, and K. Blushs, poster presentation, ICPEAC 25, July 25-31, 2007, Freiburg, Germany
110. "Autler-Townes Effect in Atoms and Molecules with Hyperfine Structure", T. Kirova, A. Ekers, M. Auzinsh, N. N. Bezuglov, and K. Blushs, poster presentation, Femtochemistry and Femtobiology 8, July 22-27, 2007, Oxford, UK
111. "Selection of Unresolved Hyperfine States of Molecules using the Autler-Townes Effect", T. Kirova, A. Ekers, M. Auzinsh, N. N. Bezuglov, and K. Blushs, poster presentation, ECAMP 9, May 6-11, 2007, Hersonissos, Greece
112. "Molecular Autler-Townes Effect and Spectroscopic Applications", T. Kirova, A. Ekers, R. Garcia-Fernandez, M. Auzinsh, K. Blush, N. N. Bezuglov, K. Michulis, L. P. Yatsenko, K. Bergmann, O. Dulieu, and M. Aymar, poster presentation, International Workshop on Atomic Physics, November 27-December 1, 2006, Dresden, Germany
113. "Autler-Townes Effect in Molecular Sodium: Spectroscopic Applications", T. Kirova, A. Ekers, R. Garcia-Fernandez, M. Auzinsh, K. Blush, N. N. Bezuglov, K. Michulis, L. P. Yatsenko, K. Bergmann, O. Dulieu, and M. Aymar, International Conference "Advances in Laser Spectroscopy: in Memory of Prof. Maris Jansons", September 28-29, 2006, Riga, Latvia
114. "Determination of Lifetimes of Excited Molecular States using the Autler-Townes Effect", A. Ekers, T. Kirova, K. Miculis, K. Blushs, M. Auzinsh, N. N. Bezuglov, R.

Garcia-Fernandez, K. Bergmann, L. P. Yatsenko, O. Dulieu, M. Aymar, poster presentation, 20<sup>th</sup> International Conference on Atomic Physics, July 16-21, 2006, Innsbruck, Austria

115. "Determination of Branching Ratios of Excited Molecular States using the Autler-Townes Effect", K. Miculis, T. Kirova, A. Ekers, N. N. Bezuglov, R. Garcia-Fernandez, K. Bergmann, O. Dulieu, M. Aymar, poster presentation, 20<sup>th</sup> International Conference on Atomic Physics, July 16-21, 2006, Innsbruck, Austria

116. "Measuring of Degenerate Molecular Levels Lifetimes using the Autler-Townes Effect", T. Kirova, A. Ekers, R. Garcia-Fernandez, M. Auzinsh, K. Blush, N. N. Bezuglov, L. P. Yatsenko, K. Bergmann, O. Dulieu, and M. Aymar, CCP6 Workshop on Coherent Control of Molecules, July 3-5, 2006, University of Birmingham, Birmingham, UK

117. "Eigenstate Control in Molecules using Strong Optical Fields", T. Kirova, F. Spano, and A. M. Lyyra, poster presentation, 38<sup>th</sup> meeting of EGAS, June 7-10, 2006, Ischia (Naples), Italy

118. "Lifetime Determination of Degenerate Molecular Levels in cw Regime using the Autler-Townes Effect", T. Kirova, A. Ekers, R. Garcia-Fernandez, M. Auzinsh, K. Blush, N. N. Bezuglov, L. P. Yatsenko, K. Bergmann, O. Dulieu, and M. Aymar, poster presentation, 38<sup>th</sup> meeting of EGAS, June 7-10, 2006, Ischia (Naples), Italy

119. "Lifetime Determination of Degenerate Molecular Levels in cw Regime using the Autler-Townes Effect", T. Kirova, A. Ekers, R. Garcia-Fernandez, M. Auzinsh, K. Blush, N. N. Bezuglov, L. P. Yatsenko, K. Bergmann, O. Dulieu, and M. Aymar, International Student Conference on Developments in Optics and Communications, April 28-30, 2006, Riga, Latvia

120. "Manipulation of Molecular Properties by Coherent Light Fields", T. Kirova, A. Ekers, R. Garcia-Fernandez, M. Auzinsh, K. Blush, N. Bezuglov, K. Michulis, and K. Bergmann, Marie Curie Conference (MC<sup>2</sup>): Putting the Knowledge Based Society into Practice, April 10-12, 2006, Manchester, UK

121. "State Selectivity and Eigenstate Design in Molecules using Multiple cw Lasers", T. Kirova, F. C. Spano, and A. M. Lyyra, poster presentation, International Workshop on Atomic Physics, November 27-December 2, 2005, Dresden, Germany

122. "Designing Molecular Eigenstates in a Four-level Lambda System", T. Kirova, F. C. Spano and A. M. Lyyra, 36<sup>th</sup> Meeting of DAMOP, May 17-21, 2005, Lincoln, Nebraska, USA

123. "Measurement of the  $X^1\Sigma_g^+$  to  $A^1\Sigma_u^+$  of  $\text{Na}_2$  Transition Dipole Moment by Autler Townes Splitting: Comparison of Three and Four Level Excitation Schemes", P. Qi, A. Hansson, T. Kirova, L. Li, A. Lazoudis, E. Ahmed, S. Magnier, A. M. Lyyra, J. Qi, poster presentation, 36<sup>th</sup> Meeting of DAMOP, May 17-21, 2005, Lincoln, Nebraska, USA

124. "Quantum State Control using Multiple cw Lasers", T. Kirova, F. C. Spano, and A. M. Lyyra, poster presentation, CLEO/ IQEC, May 16-21, 2004, San Francisco, California, USA

125. "Diatomic Alkali as a Gateway to Molecular Quantum Optics", J. Magnes, E. Ahmed, A. Lazoudis, T. Kirova, L. Narducci, F. Spano, and M. Lyyra, poster presentation, 89<sup>th</sup> Symposium of the New York State Section of the American Physical Society, October 15 -16, 2004, Brooklyn, NY, USA

126. "Electromagnetically Induced Transparency in Open Molecular Systems by Lambda, Vee and Cascade Excitation Schemes", A. Lazoudis, T. Kirova, P. Qi, E. Ahmed, J. Magnes, F. Spano, L. Narducci, L. Li, M. Lyyra, poster presentation, Gordon Research Conferences, August 3-8, 2003, Hollyoke, New Hampshire, USA

127. "Enhancement of Excited Triplet State Populations Using Quantum State Control", T. Kirova, F. C. Spano, A. M. Lyyra, OSA Annual Meeting and Exhibit, September 29-October 3, 2002, Orlando, Florida, USA

128. "Measurement of Transition Dipole Moments in Molecular Lithium Using Electromagnetically Induced Transparency", A. Lazoudis, J. Qi, F. C. Spano, T. Kirova, J. Magnes, L. Li, L. M. Narducci, R. W. Field and A. M. Lyyra, 33<sup>rd</sup> Meeting of DAMOP, May 28-June 1, 2002, Williamsburg, Virginia, USA

129. "Electromagnetically Induced Transparency in a Molecular System", J. Magnes, A. Lazoudis, T. Kirova, M. Lyyra, F. Spano, OSA Annual Meeting and Exhibit, October 14-18, 2001, Long Beach, California, USA

130. "Coherent Effects in Molecular Systems", J. Qi, F. C. Spano, T. Kirova, A. Lazoudis, J. Magnes, L. Bloy, P. Fox, L. Li, L. M. Narducci, A. M. Lyyra, poster presentation, Gordon Research Conferences, July 29- August 3, 2001, Hollyoke, New Hampshire, USA

## **Collaborations**

1. *Prof. Gediminas Juzeluinas* and *Dr. Hamid R. Hamedi*, Institute of Theoretical Physics and Astronomy, Vilnius University, Vilnius, Lithuania
2. *Prof. Jelena Tamuliene*, Institute of Theoretical Physics and Astronomy, Vilnius University, Vilnius, Lithuania
3. *Prof. Liudmila Romanova*, Institute of Electron Physics, Ukrainian Academy of Science, Uzhgorod, Ukraine
4. *Dr. Seyyed Hossein Adsapour*, Department of Physics, Iran University of Science and Technology, Tehran, Iran
5. *Prof. Emmanuel Paspalakis*, Materials Science Department, School of Natural Sciences, University of Patras, Patras, Greece
6. *Prof. Ennio Arimondo* and *Prof. Donatella Ciampini*, Department of Physics, University of Pisa, Pisa, Italy
7. *Prof. Sandro Marcel Wimberger*, Department of Mathematical, Physical and Computer Sciences, Università di Parma, Parma, Italy
8. *Prof. A. Marjatta Lyyra* and *Ass. Prof. Ergin Ahmed*, Department of Physics, Temple University, Philadelphia, USA

9. *Prof. Marcis Auzinsh*, Department of Physics, Mathematics and Optometry, University of Latvia, Riga, Latvia
10. *Prof. Ite A. Yu*, Department of Physics, National Tsing Hua University, Hsinchu, and *Dr. Yi-Hsin Chen*, Department of Physics, National Sun Yat-sen University, Kaohsiung, Taiwan
11. *Prof. WenTe Liao and Dr. YouLin Chuang*, Department of Physics, National Central University, Tayoan, Taiwan
12. *Ning Jia*, Public Experimental Center, University of Shanghai for Science and Technology and *Dr. Jing Qian*, Department of Physics, School of Physics and Electronic Science, East China Normal University, Shanghai, China
13. *Dr. Denise Boncioli*, Department of Physical and Chemical Sciences, University of L'Aquila, Coppito, Italy

## Funding

1. Horizon Europe MSCA-SE project “*Q-DYNAMO: Quantum Dynamic Control of Atomic, Molecular and Optical Processes*”, <https://cordis.europa.eu/project/id/101131418>, **project coordinator** (2024-2027)
2. Trilateral grant of the Latvian, Lithuanian, and Taiwanese Research Councils “*Coherent Optical Control of Atomic Systems*” ( project leader *Prof. Marcis Auzinsh*), in collaboration with *Prof. Gediminas Juzeluinas*, Vilnius University, Vilnius, Lithuania and *Assoc. prof. Wen Te-Liao*, Department of Physics, National Central University, Taoyuan City, Taiwan, **project coordinator and co-PI** (2022-2024)
3. COST action CA22147 (2023-2027) “European metal organic framework network: combining research and development to promote technological solutions” ( EU4MOFs).
4. COST action CA21101 (2022-2026) “Confined Molecular Systems: from a New Generation of Materials to the Stars” (COSY), **Latvia country representative**
5. COST action **CA18222** (2019-2023) “Attosecond Chemistry” (AttoChem), **Latvia country representative**
6. COST action **CA18212** (2019-2023) “Molecular Dynamics in GAS phase” ( MD-GAS), **Latvia country representative**
7. GENERA:”Gender Equality Network in the European Research Area” funded by the European Commission under GERI-4-2014 01 September 2015- 31 August 2018 grant agreement 665637, **Latvia country representative**
8. COST action **CA16221** (2017-2021) “Quantum Technologies with Ultracold Atoms” ( AtomQT), **Latvia country representative**
9. Latvia-France Partnership Program OSMOZE Project “*Mélange d'états dans des champs magnétique externes dans des atomes alcalins et des dimres*”/“*States mixing in external magnetic fields in alkali atoms and molecular dimers*“, (project leader *Prof.*

Marcis Auzinsh) in collaboration with the research group of Prof. Claude LeRoy, University of Burgundy, Dijon, France, **project coordinator** (2020-2021)

10. Trilateral grant of the Latvian, Lithuanian, and Taiwanese Research Councils “*Quantum and Nonlinear Optics with Rydberg-State Atoms*” (project leader Prof. Marcis Auzinsh), in collaboration with *Dr. Julius Ruseckas*, Vilnius University, Vilnius, Lithuania and *Prof. Ite, A. Yu*, Department of Physics, National Tsing Hua University, Hsinchu, Taiwan, **project coordinator and co-PI** (2016-2018)

11. Latvia-France Partnership Program OSOZE Project “*Electromagnetic field-control of the blockade/antiblockade effect in Rydberg ensembles*”, in collaboration with the research group of *Prof. Guido Pupillo*, Quantum Physics Laboratory, University of Strasbourg, Strasbourg, France, **project leader** (2016-2017)

## Supervised Students

**Haralds Baumanis**, BS. Physics, University of Latvia, 2017-2018, volunteer

**Edgars Stegenburgs**, BS. Physics, University of Latvia, June 2014, BS thesis co-advisor

## Community Service

-evaluator for **Latvian Science Council** project applications since 2021

-referee for **Optik** since 2024

-referee for **International Journal of Theoretical Physics** since 2023

-referee for **European Journal of Physics D** since 2022

-referee for **Optics Express** since 2021

-referee for **Physical Review A** since 2015

-referee for synopsis of the PhD thesis of A. S. Petrovskaya “Investigation of the electron-ion recombination processes in He-Ne plasmas”, St. Petersburg State University, 2015 (in Russian)

-referee for synopsis of the PhD thesis of D. K. Efimov “Ionization processes in cold Rydberg atom media”, St. Petersburg State University, 2016 (in Russian)

-organization of the 1<sup>st</sup> TLL meeting “*Quantum and Nonlinear Optics with Rydberg-State Atoms*”, 10-11 November 2016, University of Latvia, Riga

-organization of the 1st TLL Meeting “*Coherent Optical Control of Atomic Systems*”, 7-9 July 2022, University of Latvia, Riga, Latvia

-Trilateral grant of the Latvian, Lithuanian, and Taiwanese Research Councils “*Quantum and Nonlinear Optics with Rydberg-State Atoms*”, in collaboration with Julius Ruseckas, Vilnius University, Vilnius, Lithuania and Ite, A. Yu, Department of Physics, National Tsing Hua University, Hsinchu, Taiwan, **project coordinator and Co-PI** (2016-2018), prepared scientific reports and presentations, provided help with financial documents preparation and reporting



-Trilateral grant of the Latvian, Lithuanian, and Taiwanese Research Councils “*Coherent Optical Control of Atomic Systems*”, in collaboration with *Prof. Gediminas Juzeliunas*, Vilnius University, Vilnius, Lithuania and *Assoc. prof. Wen Te-Liao*, Department of Physics, National Central University, Taoyuan City, Taiwan, **project coordinator and co-PI** (2022-2024), prepared scientific reports and presentations

## **Awards**

1997 “German Foundation for Support of the Bulgarian Higher Education”

## **Special Skills**

### ***Computer***

Programming Languages: MATLAB, Mathematica, C++, Fortran

Operating Systems: UNIX, MS Windows, Linux

Packages: Origin, LaTeX, Excell

Quantum Chemistry packages: Avogadro, GAUSSIAN09, ATOMSK, OVITO, VESTA, CP2K

### ***Languages***

English-fluent (C2), Bulgarian-native, Russian-advanced (C1), Italian-upper intermediate (B2); Latvian-upper intermediate (B2)

## **Additional Education**

Sept.-November 2022            Preparatory courses ( painting), Latvian Academy of Arts, Riga, Latvia

March 2018-            Gestalt Practitioners Program,  
June 2019                Riga Gestalt Institute, Riga, Latvia

October 2016            Psychology Course,  
-June 2017                Riga Gestalt Institute, Riga, Latvia

## **Additional activities**

“Foreign Academic Staff in Latvia” group-founder

Bulgarian culture group “Riga”-participant (since 2024)

Bulgarian vocal group in Riga “Sedjanka”-participant ( till 2023)

Bulgarian Sunday School in Riga “Ivan Vazov”-director (2019-2020)

## **References**

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