YAROSLAV RYABOV, Ph.D.

Lead Data Scientist | Theoretical Physicist | AI/ML Practitioner

H-Index: 27 | 2,700+ Citations | 42 Peer-Reviewed Papers | 6 Patents

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LinkedIn: linkedin.com/in/yaroslav-ryabov
Google Scholar: scholar.google.com/citations?user=tCdEY0sAAAAJ
ResearchGate: researchgate.net/profile/Yaroslav-Ryabov
Personal Website: yaroslav-ryabov.info *(research topics & presentations)*

RESEARCH INTERESTS

Current: Multi-Agent Systems, Artificial Intelligence, Large Language Models, Natural Language Processing, Mixed Integer Linear Programming, Constraint Optimization, Convolutional Neural Networks, Automatic Prompt Optimization, LLM Evaluation and Observability, Synthetic Document Generation, Credentialing and Trust in Human-AI Actor Networks, Cosmology (Horizon Thermodynamics, Dark Energy)

Previous: Computer modeling of protein dynamics, NMR spectroscopy applications to structural biology, inter- and intra-domain dynamics in multi-domain protein systems, bioinformatics and genetics, theory of relaxation and transport in soft-condensed matter, dielectric spectroscopy, fractional calculus

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EDUCATION

Kazan State University, Kazan, Russia

Ph.D. in Theoretical Physics — December 1996
Thesis: “Relaxation and transport processes in self-similar media”
Advisor: Professor R. R. Nigmatullin

M.S. in Theoretical Physics — May 1993
Thesis: “Investigation of nonexponential relaxation law of luminescence”
Advisor: Professor R. R. Nigmatullin

PROFESSIONAL POSITIONS

FINRA | Rockville, MD

Lead Data Scientist | 2022 – Present

Building agent-based systems for financial document analysis and regulatory compliance. Designing and implementing LLM evaluation methods, monitoring standards, and performance benchmarks. Applying LLMs for information extraction from unstructured and structured data sources. Leading crowdsourced data labeling initiatives. Leading a team building a multi-agent platform for synthetic document generation. Mentoring junior data scientists and supporting technical hiring.

- Led data science for a production AI agent that analyzes ~70,000 eFOCUS financial reports annually for FINRA's systemic risk monitoring of member firms, enabling shift from selective review to comprehensive analysis of all submissions.
- Launched the agent in Q2 2026 to ~200 users with >95% adoption; delivers ~$2.5M in measured annual savings, recovered its development cost in under 3 months, and saw agent-quality issues in only 0.3% of 6,600+ user sessions in the first three weeks.
- Created and lead an A2A-based multi-agent platform for synthetic document generation, as technical and data science lead of a 4-person team. Specialized agents own distinct pipeline stages, generating documents from templates with custom labeling schemas for entities and their relationships. Completed MVP phase; production version in development.
- Own design of evaluation templates and methodology on the Arize platform, establishing the de facto standard for evaluating and monitoring LLM- and agent-based systems built at FINRA.
- Developed LLM evaluation framework using FINRA examination data and CogAT to measure domain-specific knowledge and reasoning, shaping senior management commitment to AI adoption.
- Built annotation platform on Prodigy; led 12 annotators to create FINRA-specific dataset from 10 regulatory documents (~100 pages each), producing 3,000 labeled entities and 5,000 relationship annotations.
- Built synthetic data generation platform producing 12 FINRA-specific benchmark datasets (300-1,000 documents each) for unbiased AI evaluation.
- Led AI adoption through hands-on demos: built FINRA's first agent-based chatbot Minimum Viable Prototype.
- In 2026, led 6 AI/ML projects (including eFOCUS), contributed to 4 more, served as independent data science reviewer for 9, and advised 11 run by other teams: 30 projects across FINRA.

Populus Group (Contractor for FINRA) | Rockville, MD

Data Scientist | 2021 – 2022

Developed and tested concepts and implementations of document classification models for business-related document review processes. Designed methods of performance evaluations of developed document classification models.

- Built RoBERTa-based transformer model classification platform ensuring consistent examination quality for Written Supervisory Procedure reviews.

- Developed 11 specialized classification models increasing review accuracy from 69.8% to 91.1% while accelerating throughput 30%.
- Designed human evaluation framework to assess classification model performance, validating 7 of 11 models for production deployment.

Intelligent Automation, Inc. | Rockville, MD

Research Scientist | 2016 – 2021

Developed and tested concepts of future national airspace architecture. Built tools for geometric multiresolution analysis of high-dimensional big data. Developed algorithms optimizing operations of swarms of Unmanned Aerial Vehicles.

- Contributed to FAA-funded research supporting one-million-flights initiative through airspace architecture development and airport traffic optimization.
- Rescued stalled airport traffic optimization platform by identifying and fixing critical flaws in core MILP formulation design, delivering functional solution simulating air/ground traffic interplay across runway configurations for major hubs (NYC/NJ, Dallas-Fort Worth, DC metro).
- Developed geometric multiresolution analysis methods for approximating complex high-dimensional data.
- Created optimization algorithms for unmanned aerial vehicle swarm operations using space-filling fractal Peano curves.

Federal Communications Commission | Washington, DC

Senior Software Developer | 2013 – 2016

Developed and supported platforms for managing commercial radio frequency licensing systems. Built simulation tools enabling FCC to model and evaluate new spectrum auction variants before deployment.

BC Portal, Inc. | Maryland

Chief Technology Officer, Co-owner | 2011 – 2016

Led development of portable biometric device on a platform of mobile phone. Project received $100,000 Bill and Melinda Gates Foundation Research Award in 2011. This work resulted in 2 US patents for biometric identification technology (US 9,095,285; US 9,289,160).

National Institutes of Health | Bethesda, MD

Research Scientist, CIT, Division of Computational Bioscience | 2010 – 2012
NRC Fellow, CIT, Division of Computational Bioscience | 2007 – 2010

Developed new structural restraints for overall protein shape and residue-specific bond orientations from protein rotation dynamics, implemented in Xplor-NIH.

Purdue University | West Lafayette, IN

Postdoctoral Research Associate, Department of Chemistry | 2006 – 2007

- Developed a model of random quasi-evolutionary process explaining statistics of exon size distribution in real genomes, revealing two distinctive classes of exons with different evolutionary history.
- Suggested a new method for accurate accounting of protein rotation diffusion in Molecular Dynamics trajectories.
- Designed a new type of electrophoretic gels with colored stacking parts.

University of Maryland | College Park, MD

Postdoctoral Research Associate, Center for Biomolecular Structure and Organization | 2003 – 2006

- Developed a new, efficient computational approach for evaluation of protein rotation diffusion tensors, 500 times faster than conventional HYDRONMR family programs.
- Suggested a new concept of assembling multi-domain protein structures using experimentally measured components of diffusion tensors as constraints.
- Developed a method for characterization of inter-domain mobility in multi-domain proteins using NMR relaxation and residual dipolar coupling data.

The Hebrew University | Jerusalem, Israel

Postdoctoral Research Associate, School of Applied Science, Laboratory of Dielectric Spectroscopy | 1999 – 2003

- Proposed the model of non-monotonous relaxation kinetics in confined systems with applications to porous samples, polymer micro-composites, confined liquid crystals, and folding kinetics of biopolymers.
- Created frameworks for explanation of symmetric and asymmetric broadening of dielectric relaxation spectra.
- Discovered universal behavior of associated mixtures caused by formation of joint dynamic clusters.
- Conducted numerical calculations of penetration of electromagnetic waves into living tissue.
- Research contributed to 4 patents: atmospheric control methods (EP 1,467,611; WO 2003/061370) and living tissue parameter measurement (US 8,200,307; EP 1,768,545).

Institute for Mechanics and Engineering, Kazan Scientific Center, Russian Academy of Sciences | Kazan, Russia

Research Associate, Laboratory of Underground Hydrodynamics | 1996 – 1999

- Studied theoretical aspects of multi-component filtration in porous and fractured reservoirs.
- Investigated the effect of harmonic pressure waves on commercial oil production.

HONORS AND AWARDS

- **Bill and Melinda Gates Foundation Research Award** ($100,000) — 2011
  Grand Challenges Explorations Round 6, for "Palm Vein Biometric Identification Prototype"
- **Fellows Award for Research Excellence** — 2010
  Sponsored by NIH Scientific Directors, Office of Intramural Training & Education, Office of Research on Women's Health
- **National Research Council Research Award** ($230,000) — 2007–2009
  Research Associateship at NIH, Center for Information Technology, Division of Computational Bioscience
- **Invited Publication** — 2006
  Chapter 1 in special issue on "Fractals, Diffusion and Relaxation in Disordered Complex Systems," Advances in Chemical Physics Series, John Wiley & Sons
- **Invited Publication** — 2002
  Special issue on "Strange Kinetics," Chemical Physics journal
- **Invited Publication** — 2002
  Contributed volume "Scaling and Disordered Systems"
- **Travel Award** — August 2002
  Gordon Research Conference "Water and Aqueous Solutions"
- **The Lady Davis Fellowship** ($50,000) — 1999–2001
  Postdoctoral research at The Hebrew University of Jerusalem

TEACHING EXPERIENCE

Kazan State University, Department of Physics

- **Statistical Mechanics** — 1999 (over 100 students), Zelenodolsk Campus
- **Classical Mechanics II** — 1999 (over 100 students), Zelenodolsk Campus
- **Classical Mechanics I** — 1994 (over 20 students)
- **Advanced Physics for Gifted High School Students** — 1992–1998, Preparatory School for University Applicants
- **Advanced Mathematics for Gifted High School Students** — 1992–1998, Preparatory School for University Applicants

PUBLICATIONS SUMMARY

Personal Hirsch Index: 27 | Total Citations: 2,700+

- **42** peer-reviewed journal papers and conference publications
- **4** preprints (2026, not peer-reviewed)
- **6** patents
- **21** invited lectures and seminars
- **4** publications in edited collections (contributed volumes)
- **8** oral conference presentations
- **11** conference proceeding papers
- **27** conference poster presentations

Selected Journal Publications

Journals include: *Journal of the American Chemical Society*, *Nucleic Acids Research*, *Physical Review B*, *Physical Review E*, *The Journal of Chemical Physics*, *Journal of Physical Chemistry B*, *Proteins: Structure, Function, and Bioinformatics*, *Physica A*, *Journal of Non-Crystalline Solids*, *IEEE Transactions*, and others.

REFEREED JOURNAL AND CONFERENCE PAPERS

1. F. Wieland, **Y. Ryabov**, "Future architectures for autonomous national airspace system control: Concept of operation and evaluation" *Conference Paper*, AIAA Aviation Forum, September 2017.

2. **Y. Ryabov** "Coupling between overall rotational diffusion and domain motions in proteins and its effect on dielectric spectra" *Proteins: Structure, Function, and Bioinformatics*, v. 83(9) (2015) pp. 1571–1581.

3. **Y. Ryabov**, G. M. Clore, C. D. Schwieters, "Coupling between internal dynamics and rotational diffusion in the presence of exchange between discrete molecular conformations" *Journal of Chemical Physics*, v. 136(3) (2012) #034108.

4. **Y. Ryabov**, G. M. Clore, C. D. Schwieters, "Impact of ^{15}N R_2/R_1 Relaxation Restraints on Molecular Size, Shape and Bond Vector Orientation for NMR Protein Structure Determination with Sparse Distance Restraints" *Journal of the American Chemical Society*, v. 133(16) (2011) pp. 6154–6157.

5. **Y. Ryabov**, A. Gutina, Yu. Feldman, S. Frunza, L. Frunza, A. Schönhals, "Comment on 'Investigating hydration dependence of dynamics of confined water: Monolayer, hydration water, and Maxwell-Wagner processes'" *Journal of Chemical Physics*, v. 133(3) (2010) #037101.

6. **Y. Ryabov**, G. M. Clore, C. D. Schwieters, "Direct Use of ^{15}N Relaxation Rates as Experimental Restraints on Molecular Shape and Orientation for Docking of

Protein–Protein Complexes" *Journal of the American Chemical Society*, v. 132(17) (2010) pp. 5987–5989.

7. **Y. Ryabov**, J.-Y. Suh, A. Grishaev, G. M. Clore, C. D. Schwieters, "Using the Experimentally Determined Components of the Overall Rotational Diffusion Tensor to Restrain Molecular Shape and Size in NMR Structure Determination of Globular Proteins and Protein-Protein Complexes" *Journal of the American Chemical Society*, v. 131(27) (2009) pp. 9522–9531.

8. **Y. Ryabov**, M. Gribskov, "Spontaneous symmetry breaking in genome evolution" *Nucleic Acids Research*, v. 36(8) (2008) pp. 2756–2763.

9. **Y. Ryabov**, D. Fushman "Structural Assembly of Multidomain Proteins and Protein Complexes Guided by the Overall Rotational Diffusion Tensor" *Journal of the American Chemical Society*, v. 129(25) (2007) pp. 7894–7902.

10. **Y. Ryabov**, C. White, Yi Xue, and N. R. Skrynnikov "Introducing color into stacking gels makes sample loading easy" *Analytical Biochemistry*, v. 366(1) (2007) pp. 111–112.

11. Yi Xue, M. S. Pavlova, **Y. Ryabov**, B. Reif, N. R. Skrynnikov "Methyl rotation barriers in proteins from ^{2}H relaxation data. Implications for protein structure." *Journal of the American Chemical Society*, v. 129(21) (2007) pp. 6827–6838.

12. **Y. Ryabov**, D. Fushman "A Model of Interdomain Mobility in a Multi-Domain Protein" *Journal of the American Chemical Society*, v. 129(11) (2007) pp. 3315–3327.

13. **Y. Ryabov**, C. Geraghty, A. Varshney, and D. Fushman, "An efficient computational method for predicting rotational diffusion tensors of globular proteins using an ellipsoid representation" *Journal of the American Chemical Society*, v. 128(48) (2006) pp. 15432–15444.

14. B. Reif, Y. Xue, V. Agarwal, M. S. Pavlova, M. Hologne, A. Diehl, **Y. Ryabov**, and N. R. Skrynnikov, "Protein Side-Chain Dynamics Observed by Solution- and Solid-State NMR: Comparative Analysis of Methyl ^{2}H Relaxation Data" *Journal of the American Chemical Society*, v. 128(38) (2006) pp. 12354–12355.

15. **Y. Ryabov**, D. Fushman, "Analysis of Interdomain Dynamics in a Two-Domain Protein Using Residual Dipolar Couplings Together with ^{15}N Relaxation Data" *Magnetic Resonance in Chemistry*, v. 44 (2006) pp. S143–S151.

16. **Y. Ryabov**, D. Fushman, "Interdomain Mobility in Di-Ubiquitin Revealed by NMR" *PROTEINS: Structure, Function, and Bioinformatics*, v. 63 (2006) pp. 787–796.

17. M. S. Talary, F. Dewarrat, A. Caduff, A. Puzenko, **Y. Ryabov**, and Y. Feldman "An RCL sensor for measuring dielectrically lossy materials in the MHz frequency range" *IEEE Transactions on Dielectrics and Electrical Insulation*, v. 13(2) (2006) pp. 247–256.

18. P. Ben Ishai, C. E. M. de Oliveira, **Y. Ryabov**, Yu. Feldman, and A. J. Agranat, "Unusual glass-like systems - relaxation dynamics of Cu^{+} ions in ferroelectric KTN crystals" *J. Non-Cryst. Sol.* v. 351 (2005) pp. 2786–2792.

19. Y. Hayashi, A. Puzenko, I. Balin, **Y. Ryabov**, Yu. Feldman, "Relaxation Dynamics in Glycerol-Water Mixtures: II. Mesoscopic feature in water rich mixtures" *J. Phys. Chem. B*, v. 109 (2005) pp. 9174–9177.

20. A. Puzenko, Y. Hayashi, **Y. Ryabov**, I. Balin, Yu. Feldman, U. Kaatze, and R. Behrends "Relaxation Dynamics in Glycerol-Water Mixtures: I. Glycerol-Rich Mixtures" *J. Phys. Chem. B*, v. 109 (2005) pp. 6031–6035.

21. A. Khain, V. Arkhipov, M. Pinsky, Y. Feldman and **Y. Ryabov** "Rain enhancement and fog elimination by seeding with charged droplets. Pt.1: Theory and numerical simulations" *Journal of Applied Meteorology*, v. 43 (2004) pp. 1513–1529.

22. P. Ben Ishai, C. E. M. de Oliveira, **Y. Ryabov**, Yu. Feldman, and A. J. Agranat, "Glass-forming liquid kinetics manifested in a KTN: Cu crystal" *Physical Review B*, v. 70, 132104 (2004).

23. **Y. Ryabov**, G. Marom and Yu. Feldman, "The significance of dielectric spectroscopy in the study of transition dynamics and morphology of transcrystallinity in polymeric composites" *Journal of Thermoplastic Composite Materials*, v. 17 (2004) pp. 463–475.

24. **Y. Ryabov**, A. Puzenko, Yu. Feldman, "Nonmonotonous Relaxation Kinetics of Confined Systems" *Physical Review B*, v. 69, #014204 (2004).

25. **Y. Ryabov** "Free Volume Concept in Application to Folding Kinetics of Random Heteropolymers" *Journal of Physical Chemistry B*, v. 107 (2003) pp. 12009–12012.

26. **Y. Ryabov** "Behavior of Fractional Diffusion at Origin" *Physical Review E, Rapid Communications*, v. 68 (2003) 03012(R).

27. **Y. Ryabov**, Yu. Feldman "Reply to 'Comment on Novel approach to the analysis of the Non-Debye dielectric spectrum broadening'" *Physica A*, v. 326 (2003) pp. 607–608.

28. **Y. Ryabov**, Y. Hayashi, A. Gutina, Y. Feldman "Features of Supercooled Glycerol Dynamics" *Physical Review B* v. 67, #132202 (2003).

29. **Y. Ryabov**, Yu. Feldman "The relationship between the scaling parameters and relaxation time for non-exponential relaxation in disordered systems" *Fractals* v. 11 supl. (2003) pp. 173–183.

30. **Y. Ryabov**, H. Huriel, G. Marom, Yu. Feldman "Relaxation peak broadening and polymer chain dynamics in aramid fiber reinforced nylon 66 microcomposites" *Journal of Polymer Science Part B: Polymer Physics*, v. 41 (2003) pp. 217–223.

31. **Y. Ryabov**, A. Puzenko "Damped Oscillations in View of Fractional Oscillator Equation" *Physical Review B* v. 66, #184201 (2002).

32. **Y. Ryabov**, Yu. Feldman "Novel approach to the analysis of the Non-Debye dielectric spectrum broadening" *Physica A*, v. 314 (2002) pp. 370–378.

33. Yu. Feldman, A. Puzenko, **Y. Ryabov** "Non Debye Dielectric Relaxation in Complex Materials" *Chemical Physics* v. 284, Issue 1-2 (2002) pp. 139–168.

34. **Y. Ryabov**, Yu. Feldman, N. Shinyashiki, S. Yagihara "The symmetric broadening of the water relaxation peak in polymer-water mixtures and its relationship to the hydrophilic and hydrophobic properties of polymers" *J. Chem Phys.* v. 116, N19 (2002) pp. 8610–8615.

35. Y. Haruvy, **Y. Ryabov**, V. Arkhipov, A. Gutina, E. Axelrod, Yu. Feldman "Fast-sol-gel derived silsequioxane glasses embodying glycerol moieties: dielectric properties and morphology" *J. Non-Cryst. Sol.* v. 305 (2002) pp. 226–234.

36. Yu. A. Gusev, N. N. Soutougin, **Y. Ryabov** and F. I. Derkatch, "Dielectric and NMR Relaxation of Water in Sandstone" *International Journal of Science "Georesources"* v. 1(4) (2001) pp. 17–20.

37. **Y. Ryabov**, A. Gutina, V. Arkhipov, and Yu. Feldman, "Dielectric relaxation of water absorbed in porous Glass" *J. Phys. Chem. B*, v. 105(9) (2001) pp. 1845–1850.

38. I. Ermolina, G. Smith, **Y. Ryabov**, Yu. Polevaja, A. Puzenko, R. Nigmatullin, and Yu. Feldman, "Effect of Penetration on the Dynamic Behavior of Phosphatidylcholine Headgroups in Liposomes" *J. Phys. Chem. B*, v. 104(6) (2000) pp. 1373–1381.

39. R. R. Nigmatullin, M. N. Ovchinnikov, **Y. Ryabov**, "Fractals: from the tracery to the motion" *Priroda*, № 2 (1998) pp. 61–71 (in Russian).

40. R. R. Nigmatullin, **Y. Ryabov**, "Cole-Cole Relaxation and the self-similar relaxation process" *Izvestia VUZ: Physica*, № 4 (1997) pp. 6–11.

41. R. R. Nigmatullin, **Y. Ryabov**, "Cole-Davidson Relaxation and the self-similar relaxation process" *Fiz. Tverd. Tela (St. Petersburg)*, Vol. 39, № 1 (1997) pp. 101–105 (in Russian); *Physics of the Solid State*, Vol. 39, № 1 (1997) pp. 87–90 (English translation).

42. Yu. Feldman, N. Kozlovich, Y. Alexandrov, R. Nigmatullin and **Y. Ryabov** "Mechanism of the cooperative relaxation in microemulsion near the percolation threshold" *Phys. Rev. E.* v. 54(5) (1996) pp. 5420–5427.

PREPRINTS (NOT PEER-REVIEWED)

1. **Y. Ryabov** "A ladder of conclusions on the history of dark energy: an inception at z $\simeq$ 4 preferred by Planck, DESI DR2, and Pantheon+ data" *Zenodo* (November 2026).

https://doi.org/10.5281/zenodo.24095722. Code: https://doi.org/10.5281/zenodo.24069444.

2. **Y. Ryabov** "The Game of Peers: Toward a Credential Algebra for Human-AI Actor Networks" *Zenodo* (September 2026). https://doi.org/10.5281/zenodo.19644281. Under review at *Journal of Computer Security*. Code: https://doi.org/10.5281/zenodo.23002445.

3. **Y. Ryabov** "Matter Content and Gauge Structure from the Symmetries of the Cosmological Horizon — A Speculative Note II" *Zenodo* (March 2026). https://doi.org/10.5281/zenodo.19320422.

4. **Y. Ryabov** "Horizon Thermodynamics and the Cosmological Constant: A Holographic Dark Energy Note on Why Now?" *Zenodo* (March 2026). https://doi.org/10.5281/zenodo.18843292.

PATENTS

1. **Y. Ryabov**, D. Broydo "Portable Biometric Identification Device Using a Dorsal Hand Vein Pattern" US Patent 9,095,285 (2015).

2. **Y. Ryabov**, D. Broydo "Portable Biometric Identification Device Using a Dorsal Hand Vein Pattern" US Patent 9,289,160 (2016) — Continuation.

3. A. Caduff, P. Truffer, **Y. Ryabov**, Y. Feldman, A. Puzenko "Method and device for determining a parameter of living tissue" US Patent 8,200,307 (2012).

4. A. Caduff, P. Truffer, **Y. Ryabov**, Y. Feldman, A. Puzenko "Method and device for determining a parameter of living tissue" EP Patent 1,768,545 (2009).

5. A. Khain, Y. Feldman, M. Pinsky, V. Arkhipov, **Y. Ryabov**, A. Puzenko "Method and apparatus for controlling atmospheric conditions" EP Patent 1,467,611 (2005).

6. A. Khain, Y. Feldman, M. Pinsky, V. Arkhipov, **Y. Ryabov**, A. Puzenko "Method and apparatus for controlling atmospheric conditions" WO Patent 2003/061370 (2003).

INVITED LECTURES AND SEMINARS

1. "Experimental restraints from NMR relaxation for protein structure calculations" — National Center for Biodefense and Infectious Diseases, George Mason University, January 2014.

2. "Experimental restraints from NMR relaxation for protein structure calculations" — Department of Biochemistry and Biophysics, University of North Carolina, Chapel Hill, October 2013.

3. “Model of Large Scale Conformational Mobility in Proteins” — New York Structural Biology Center, October 2013.

4. “Model of Large Scale Conformational Mobility in Proteins” — Laboratory of Biophysical Chemistry, Johns Hopkins University, May 2013.

5. “Model of Large Scale Conformational Mobility in Proteins” — Laboratory of Computational Biology, NIH, April 2013.

6. “Experimental Restraints on Molecular Shape for Protein Structure Calculations” — Structural Biophysics Laboratory, National Cancer Institute, NIH, January 2013.

7. “Model of Large Scale Conformational Mobility in Proteins” — BioMaPS Institute, Rutgers University, October 2012.

8. “Model of Large Scale Conformation Mobility in Proteins” — NIDDK, NIH, May 2012.

9. “Methods of Protein Structure Elucidation” — Johns Hopkins University, Montgomery County Campus, April 2012.

10. “Coupling between Internal Molecular Motions and Rotational Diffusion” — NHLBI, NIH, February 2012.

11. “^{15}N NMR Relaxation Data as Structural Restraints for Assembling Protein Complexes” — NIDDK, NIH, May 2011.

12. “Lognormal Pattern of Exon Size Distribution in Eukaryotic Genomes” — University of North Carolina at Charlotte, November 2010.

13. “Lognormal Pattern of Exon Size Distribution in Eukaryotic Genomes” — NIDDK, NIH, November 2010.

14. “Some Concepts of Protein Structure Elucidation” — Johns Hopkins University, Montgomery County Campus, November 2010.

15. “Some Concepts of Computational Structural Biology” — Johns Hopkins University, Montgomery County Campus, March 2010.

16. “Structural Information from Protein Dynamics” — NIDDK, NIH, March 2009.

17. “Concepts of Computational Biology” — Johns Hopkins University, Montgomery County Campus, June 2008.

18. “Structural and Computational Biology” — Kazan Institute of Biochemistry and Biophysics, Russian Academy of Sciences, May 2008.

19. “Structural and Computational Biology” — Kazan State University, Department of Theoretical Physics, May 2008.

20. “Multi-domain protein Structure and Dynamics with insights for bioinformatics” — Indiana University, Bloomington, March 2007.

21. "Dynamics of Di-Ubiquitin" — Purdue University, March 2006.

CONTRIBUTED VOLUMES

1. Y. Feldman, A. Puzenko and **Y. Ryabov**, "Chapter 1. Dielectric Relaxation Phenomena in Complex Materials" pp. 1–125, *Advances in Chemical Physics*, Volume 133, Part A, *Fractals, Diffusion and Relaxation in Disordered Complex Systems*, John Wiley & Sons, 2006.

2. Y. Hayashi, **Y. Ryabov**, A. Gutina and Yu. Feldman, "Slow Dynamics and Dielectric Relaxation in Water/Glycerol Mixtures" in *Slow Dynamics in Complex Systems*, American Institute of Physics, Vol. 708 (2004) pp. 671–672.

3. **Y. Ryabov**, Yu. Feldman "The relationship between the scaling parameter and relaxation time for non-exponential relaxation in disordered systems" in *Scaling and Disordered Systems*, World Scientific, Singapore, 2002, pp. 173–183.

4. Yu. Feldman, **Y. Ryabov**, A. Puzenko, A. Gutina and N. Kozlovich, "Dielectric relaxation of water adsorbed in pore surface of silica glasses" in AIP conference proceedings *Slow Dynamics in Complex Systems*, Fukuoka, Japan, 1998, pp. 236–242.

ORAL CONFERENCE PRESENTATIONS

1. **Y. Ryabov**, G. M. Clore, C. D. Schwieters, "Model of Large Scale Conformation Mobility in Proteins" — 53rd Experimental Nuclear Magnetic Resonance Conference (ENC), Miami, FL, April 2012.

2. **Y. Ryabov**, D. Fushman, "Inter-Domain Dynamics in a Two-Domain Protein Studied by NMR" — APS Meeting, Baltimore, MD, March 2006.

3. **Y. Ryabov**, Y. Hayashi, A. Gutina, Yu. Feldman, "New Features of Supercooled Glycerol Dynamics" — 2nd International Conference on Broadband Dielectric Spectroscopy and its Applications, Leipzig, Germany, September 2002.

4. Yu. Feldman, **Y. Ryabov**, A. Gutina, V. Arkhipov, "Dielectric Relaxation of Water Absorbed in Porous Glasses" — 4th International Conference on Electromagnetic Wave Interaction with Water and Moist Substances, Weimar, Germany, May 2001.

5. V. I. Arkhipov, **Y. Ryabov**, A. Khain, M. Pinsky, "Growth of Water Droplet with Soluble Kernel" — 15th Annual Meeting of Israel Association for Aerosol Research, The Hebrew University of Jerusalem, May 2001.

6. **Y. Ryabov**, Yu. Feldman, "The relationship between the Cole-Cole exponent and the mean relaxation time" — 1st International Conference on Dielectric Spectroscopy (DS 2001), Jerusalem, Israel, March 2001.

7. **Y. Ryabov**, Yu. Feldman, "The Relationship between the Scaling Parameter and Relaxation Time for Non-exponential Processes in Disordered Systems" — International Workshop on Scaling and Disordered Systems, Paris, France, April 2000.

8. **Y. Ryabov**, Yu. Feldman, "The Cole-Cole Exponent and Its Relation to The Relaxation Time" — 6th International Conference on Dielectric and Related Phenomena (DRP2000), Spala, Poland, September 2000.

SELECTED POSTER PRESENTATIONS

1. **Y. Ryabov**, G. M. Clore, C. D. Schwieters, "Using NMR relaxation data as restraints for structure determination of globular proteins and docking of protein-protein complexes" — Keystone Symposium on Structural Biology, Breckenridge, CO, January 2010.

2. **Y. Ryabov**, "Features of Genome Evolution derived from exon size distributions" — Keystone Symposium on Structural Biology, Breckenridge, CO, January 2010.

3. **Y. Ryabov**, M. Gribskov, "Spontaneous Symmetry Breaking in Genome Evolution" — ISMB 2008 (International Conference on Intelligent Systems for Molecular Biology), Toronto, Canada, July 2008.

4. **Y. Ryabov**, C. D. Schwieters, "Structure determination of protein-protein complexes using parameters of their overall rotational dynamics available via NMR relaxation data" — 3Dsig 2008 (Satellite meeting of ISMB), Toronto, Canada, July 2008.

5. **Y. Ryabov**, V. I. Arkhipov, A. Khain, M. Pinsky, "Growth of Water Droplet with Soluble Kernel" — Gordon Research Conference "Water and Aqueous Solutions", Plymouth, NH, August 2002.

6. **Y. Ryabov**, Yu. Feldman, N. Shinyashiki, S. Yagihara, "Symmetric Broadening of water relaxation peak in polymer-water mixtures" — Gordon Research Conference "Water and Aqueous Solutions", Plymouth, NH, August 2002.

7. **Y. Ryabov**, D. Fushman, "Inter-Domain Dynamics in a Two-Domain Protein Revealed by NMR" — 46th Experimental Nuclear Magnetic Resonance Conference (ENC), Providence, RI, April 2005.

Plus 20 additional poster presentations at international conferences (1996–2012).

TECHNICAL SKILLS

AI/ML: MCP (Model Context Protocol), A2A (Agent-to-Agent), Multi-Agent Systems, Large Language Models (Claude, Llama), Prompt Engineering & Optimization, DSPy, LLM Evaluation & Observability, NLP, Deep Learning, CNNs, Synthetic Data Generation

Programming: Python, Java, C/C++, SQL, MATLAB, Fortran

ML Tools: Google ADK, Arize, HuggingFace, Prodigy, PyTorch, TensorFlow, Scikit-learn, Jupyter, AI Code Assistants

Cloud/Data: AWS (EC2, S3, SageMaker), Google Cloud Platform, Oracle, MySQL, PostgreSQL

Development: REST APIs, CI/CD, Git, Agile/Scrum, VS Code, IntelliJ

Scientific: Xplor-NIH, LaTeX

ADDITIONAL INFORMATION

Languages: English (fluent), Russian (native)

Citizenship: United States

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