Andrii **GUDYMA**

Curriculum Vitæ

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Summary

Quantitative Analyst with PhD in Theoretical Physics and strong analytical and numerical skills. Experience in development and implementation of valuation models for finance and credit derivatives. Large experience at programming in C/C++, Python and other programming languages. Experience with SQL and application of statistical methods in analyzing data. Experience with applying Monte Carlo simulations. Excellent math skills and problem-solving mindset. Good communication skills and large experience working in international multicultural environment.

Work and Education

2021 - present	**Quantitative Analyst**, *Credit Suisse, Quantitative Strategies, Warsaw, Poland*.
2018 - 2020	**Postdoctoral researcher**, *Max Planck Institute of Micro-structure Physics, Halle, Germany*.
2016 - 2018	**Postdoctoral researcher**, *Faculty of Science, University of Split, Croatia*.
2012 - 2015	**Ph.D. degree at Laboratoire de Physique Théorique et Modèles Statistiques**, *Université Paris-Sud*, Paris, 28 October 2015. Thesis advisers: Gora Shlyapnikov and Mikhail Zvonarev. Title: "Non-equilibrium dynamics of a trapped one-dimensional Bose gas"
2010 - 2012	**Master of Science Diploma**, *obtained at Taras Shevchenko National University of Kyiv*, 31 May 2012, Passed with honours.
2006 - 2010	**Bachelor of Science Diploma**, *obtained at Taras Shevchenko National University of Kyiv*, 30 June 2010, Passed with honours.

Career development and projects history

I obtained a Ph.D. degree at the Laboratory of Theoretical Physics and Statistical models (Paris-Sud University, Paris, France) where I was working with major scientists in the condensed matter physics. I got an opportunity to learn about the statistical methods and Monte Carlo simulations and extensively used these skills during the two postdoctoral researches which I did after getting a degree. My thesis aimed to clarify behaviour of the quantum gas under small quenches.

As a postdoctoral researcher I participated in developing new Quantum Monte Carlo methods which allows to perform simulation of systems with discrete degrees of freedom. Continuous Spin Variational and Diffusion Monte Carlo are methods which allows to obtain properties of the quantum mechanical system. Our group was developing a proprietary high-performance computing code in C++ using OpenMP and MPI libraries. I continued this research at the the Max Planck Institute for microstructure physics, expanding application of the new methods to the computation of quantum information quantities for electrons in the quantum dots and spin-lattice models.

At my current position at Credit Suisse I am working as a quantitative analyst participating in development, implementation and further support of valuation models and corresponding pricing products. As a part of Quantitative Strategies I got experience in working with finance and credit derivatives. Part of responsibilities was to work on the projects for model improvements arriving form the trading desk and complete them due to tight timeline. In the collaboration with other teams I have participated in designing scripts in PySpark/SQL for analyzing big data and creating automatic reports in the Databricks platform.

Personal achievements and skills

- Ph.D. in theoretical physics
- Good programming experience
- Experience with finance and credit derivatives
- Experience with Monte Carlo and Stochastic simulations
- Developing new Monte Carlo methods for the exotic models in physics
- Developing and analyzing scientific models
- Problem-solving and analytic quantitative thinking
- Prises at the Ukrainian national Olympiads in mathematics and programming
- Writing articles in top scientific journals and reports about progress in the project development
- Teaching experience
- Large experience presenting results on the conferences
- Experience in organizing conferences and workshops
- Writing and winning scientific grants

Computer skills

Operating systems	**Windows, Linux (Ubuntu, Debian).**
Programming	**C/C++, HPC (OpenMP, MPI), F#, Python, PySpark/SQL, Excel, TEX, Mathematica, Origin, HTML**
Simulations	**Monte Carlo simulations, Stochastic simulations.**

Languages

English	**Fluent**
Ukrainian	**Native speaker**
Russian	**Native speaker**
Polish	**Good**
French	**Fluent**
Croatian	**Fluent**

Selected Scientific Publications

- Effect of compression in molecular spin-crossover chains (2021), Low Temperature Physics **47**, 457 (2021)
- 1D Spin-Crossover Molecular Chain with Degenerate States, Journal of Applied Physics **129**, 123905 (2021)
- Spin-orbit-coupled quantum memory of a double quantum dot, L. Chotorlishvili, A. Gudyma, J. Wätzel, A. Ernst, J. Berakdar Phys. Rev. B **100**, 174413 (2019)
- Universality of size-energy ratio in four-body systems, Petar Stipanović, Leandra Vranješ Markić , Andrii Gudyma and Jordi Boronat, Scientific reports **9** (1), 6289 (2019)
- Reentrant behavior of breathing mode in one-dimensional Bose gas, A. Iu. Gudyma, G. E. Astrakharchik, Mikhail B. Zvonarev, Phys. Rev. A, **92** 021601 (2015)
- Noise-induced collective regimes of complex system in contact with a random reservoir, A.Iu. Gudyma, Iu.V. Gudyma, Physica A, **389** 667 (2010)