

ARTEM KOTOV

PhD Student @ St. Petersburg State University

📍 St. Petersburg, Russia
🌐 github.com/breengles

@ artem.a.kotov@gmail.com
🔗 orcid.org/0000-0002-4629-138X

📱 t.me/breengles

EXPERIENCE

Engineer Researcher

Quantum Mechanics Lab @ St. Petersburg State University

📅 Aug 2018 – Present

📍 St. Petersburg, Russia

- Research and development of numerical algorithms for a relativistic spectrum calculation of the diatomic quasimolecules
- Performing chemistry property calculation of the super-heavy elements and molecules

Teaching

St. Petersburg State University

📅 Feb 2018 – Jun 2018

📍 St. Petersburg, Russia

- Theoretical and practical course on the introduction to the quantum mechanics for college students

ACHIEVEMENTS

- 2nd place in «Start-Up SPbU 2018»

SKILLS

Unix, MacOS, Windows

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Fortran
Python

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DIRAC
PyTorch

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English
German

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EDUCATION / COURSES

PhD student

St. Petersburg State University

📅 Sept 2020 – Present

MSc. in Physics

St. Petersburg State University

📅 Sept 2018 – June 2020

BSc. in Physics

St. Petersburg State University

📅 Sept 2014 – June 2018

Master student in Machine Learning

Higher School of Economics

📅 Sep 2020 – Present

HONOURS & AWARDS

- Master degree with honours in 2020
- Received stipend for excellent study and research results during master program

Hard-working (18/24)

Persuasive

Motivator & Leader

PROJECTS

Electronic structure of heavy few-electron diatomic quasimolecules, G-RISC

- Research on the configuration interaction method to the electronic correlation calculation in the diatomic quasimolecules
- Development of the computational package to perform the electronic correlation calculation on the highest accuracy up-to-date based on the A-DKB B-Spline program.

Energy Spectra of Diatomic Quasimolecules

- Development and modification of the numerical program for the electronic spectra calculation of the diatomic quasimolecules
- Research and development of the 1st-order quantum electrodynamics contribution of the inter-electronic interaction energy
- Optimization of the resource consumption by program

Super-heavy nuclei and atoms: mass limit of nuclei and boundary of the periodic table

- Property calculation of the super-heavy molecules and atoms such as dipole moment, polarizability, optimal geometry etc
- Calculation via coupled cluster approach implemented in DIRAC: Program for Atomic and Molecular Direct Iterative Relativistic All-electron Calculations

Makeup & Science

- Research and development of generative-adversarial network (GAN) application to makeup generation
- Vectorization (makeup2vec) of the existing make-ups made by real makeup artist

PUBLICATIONS

Journal Articles

- Kotov, A. A. et al. (2019). "Ground-State Energy of Uranium Diatomic Quasimolecules with One and Two Electrons." In: *X-Ray Spectrometry* 49 (1), p. 110.
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Conferences

- "Energy Spectra of Heavy Diatomic Homonuclear Quasimolecules" (2020). In: *17th SPARC workshop, poster, video conference*.
- "Ground and excited states energy of heavy diatomic homonuclear quasimolecules" (2019). In: *PNPI 53th Annual Winter School 2019, talk, St. Petersburg, Russia*.
- "Ground-State Energies of Heavy Diatomic Homonuclear Quasimolecules" (2019). In: *16th SPARC workshop, poster, Jena, Germany*.
- "Ground-state Energy of Heavy Diatomic Homonuclear Quasimolecules" (2019). In: *10 Years of G-RISC and Beyond, talk & poster, Berlin, Germany*.
- "Ground-state energy of heavy diatomic homonuclear quasimolecules" (2018). In: *9th International Student Conference «Science and Progress-2018», talk, St. Petersburg, Russia*.
- "Ground-State Energy of Uranium Diatomic Quasimolecules with One and Two Electrons." (2018). In: *19th International Conference on Physics of Highly Charged Ions, poster, Lisbon, Portugal*.
- "Ground-state energy of heavy diatomic homonuclear quasimolecules" (2017). In: *8th International Student Conference «Science and Progress-2017», poster, St. Petersburg, Russia*.