Viktor Valmispild, Ph.D.

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Professional Experience

05.2024 – present **Reseach Engineer, Skolkovo Institute of Science and Technology, Moscow (Russia)**
- USPEX code development
- Prediction of stable molecular crystal compounds

06.2022 – 05.2024 **Training Machine Learning with certification / Math and physics private tutor**
- Completed Math, Machine Learning, Deep Learning specializations on Coursera platform
- Developed ML and DL projects
- Taught mathematics and physics to schoolchildren and university students as a private tutor

06.2020 – 06.2022 **Postdoctoral Researcher, University of Hamburg, Hamburg (Germany)**
- Developed and applied "Sub-cycle multidimensional spectroscopy" method(based on TD-DMFT) for modeling Pump-Probe experiment.
- Supervised master and doctoral students

01.2020 – 06.2020 **Physicist, European XFEL, Schenefeld (Germany)**
- Tested and applied two numerical methods (TD-ED, TD-DFT) to study and model time-dependent photoemission spectrum data

Education

11.2014 – 12.2019 **Ph.D. in Theoretical Physics, University of Hamburg, Hamburg (Germany)**
Supervisor: Prof. Dr. Alexander Lichtenstein
- Conducted a first-principles study of magnetic exitations in ferromagnetic materials (TD-DFT)
- Developed models (IPT, DMFT-T-matrix, DMFT-FLEX) and its Python/C implementations for modeling Pump-Probe experiment
- Graduated with "Magna Cum Laude"

09.2012 – 07.2014 **Master of Physics, Siberian State Aerospace University, Krasnoyarsk (Russia)**
- Developed and applied models(t-J, Hubbard) for studying superconducting materials
- Student group leader
- Graduated with honors

09.2008 – 07.2012 **Bachelor of Physics, Siberian State Aerospace University, Krasnoyarsk (Russia)**
- Conducted a numerical study of the electron energy loss spectra Mn and Pd
- Carried out an experiment and analysis of a silicon surface using atomic force microscopy
- Winner of 3 scholarships and manager of 2 educational grants
- Graduated with honors

IT Skills

Python	NumPy, SciPy, Pandas, Scikit-Learn, Imblearn, TensorFlow-Keras, Selenium, Beautiful Soup, Pickle, Flask / Jupyter, PyCharm
Other Lang-s	C, Matlab, SQL
Data Viz	Python(Matplotlib, Plotly, Seaborn), Gnuplot
IT tools	Linux, Microsoft Windows, MacOS / Git, Markdown, Microsoft Office, LaTeX, Inkscape, Origin
Sci packages	USPEX, VASP, ELK, NESSi, TRIQS-realevol

Competencies

Cloud computing

5+ years programming and calculation experience on computer clusters (Skoltech-Oleg, Physnet, Maxwell, HLRN)

Languages

English (advanced), German (intermediate), Russian (native)

Publications

Sub-cycle multidimensional spectroscopy of strongly correlated materials
V. Valmispild, E. Gorelov, M. Eckstein, A. Lichtenstein, H. Aoki, M. Katsnelson, M. Ivanov and O. Smirnova, *Nature Photonics* 2024

Dynamically induced doublon repulsion in the Fermi-Hubbard model probed by a single-particle density of states
V. Valmispild, C. Dutreix, M. Eckstein, M. Katsnelson, A. Lichtenstein, and E. Stepanov, *Physical Review B* 2020

Spin-density fluctuations and the fluctuation-dissipation theorem in 3d ferromagnetic metals
A. Wysocki, V. Valmispild, A. Kutepov, S. Sharma, J. Dewhurst, E. K. U. Gross, A. Lichtenstein, and V. Antropov, *Physical Review B* 2017

Ultrafast dynamics of strongly correlated systems
V. N. Valmispild, PhD thesis 2019

Selected Conferences & Workshops

07.2019	"International Workshop on Strong Correlations and Angle-Resolved Photoemission Spectroscopy", Oxford (United Kingdom)
04.2018	Conference: "Strongly Correlated Materials: Experiments and Computation", Tel Aviv (Israel)
11.2017	Conference: "New trends in theory for experiments at advanced light sources", European XFEL GmbH, Schenefeld (Germany)
07.2017	International conference Strongly Coupled Coulomb Systems, Kiel (Germany)
07.2017	International workshop on strong correlations and angle-resolved photoemission spectroscopy, Hiroshima (Japan)
03.2017	Spring Meeting of the German Physical Society, Dresden (Germany)
11.2016	1st Joint Czech-Israeli Workshop "Strong electron correlations in nano-materials for advanced energy applications", Prague (Czech Republic)
09.2016	School and Workshop "7th Time-Dependent Density-Functional Theory: Prospects and Applications", Benasque (Spain)
08.2016	VI Euro-Asian Symposium "Trends in Magnetism", Krasnoyarsk (Russia)
04.2016	Workshop: "XUV spectroscopies and time resolved dynamics", Basovizza (Italy)
09.2015	2nd International Workshop on Dynamical Mean-Field Approach for Strongly Correlated Materials, Dresden (Germany)

Additional qualifications

Convolutional Neural Networks (Coursera 12.2023), Structuring Machine Learning Projects (Coursera 11.2023), Improving Deep Neural Networks (Coursera 11.2023), Neural Networks and Deep Learning (Coursera 09.2019), Mathematics for Machine Learning and Data Science Specialization (Coursera 11.2023): Linear Algebra for Machine Learning and Data Science (Coursera 11.2023), Calculus for Machine Learning and Data Science (Coursera 10.2023), Probability and Statistics for Machine Learning and Data Science (Coursera 09.2023). Machine Learning Specialization (Coursera 09.2023): Supervised Machine Learning: Regression and Classification (Coursera 08.2023), Advanced Learning Algorithms (Coursera 09.2023), Unsupervised Learning, Recommenders, Reinforcement Learning (Coursera 09.2023). Intermediate Machine Learning (Kaggle 01.2023), German language (Goethe certificate B1 11.2022), Python for Data Science and AI (Coursera 04.2019), Data Science Methodology (Coursera 03.2019), Python Advanced Course (lead by Mr. Bernd Klein "Bodenseo" 06.2017).