Ksenija Kovalenka

Profile

Enthusiastic and dedicated undergraduate physics student willing to enhance existing skills and gain knowledge in the research sector. Possesses outstanding numeracy and observational skills gained during studies together with important time management abilities. Independent and fast learner, capable of taking responsibility and performing a given task fast and precisely.

Education

Physics MPhys, The University of Manchester

SEPTEMBER 2019 — PRESENT

Current grade average: 80 %

Aimed grade: 1st Class Master's Degree

Relevant Courses:

Condensed Matter Physics, Mathematical Fundamentals of Quantum mechanics, Advanced Quantum Mechanics, Electrodynamics, Quantum Computing.

John Leggott College

SEPTEMBER 2017 — AUGUST 2019

Graduated with three A* and best student award for one of the subjects.

Relevant Projects and Academic Experience

Summer research project

JULY 2022 — AUGUST 2022, THE UNIVERSITY OF MANCHESTER

Quantum Mechanics and Machine Learning. (implemented in Python)

Learned the principles of Machine Learning and Quantum Computing. Created a neural network to explore the potential use and functionality of quantum machine learning. Researched the possible applications of the quantum neural networks in solid state. Proposed and took a Master's project *'Modelling Quantum Lattices Using a Combination of Deep Learning and Quantum Computing Methods'* as an extension to this work.

Independent research projects

AUGUST 2019 — SEPTEMBER 2021

Variational Quantum Eigensolver Algorinthm and its Applications. (implemented in Python, Qiskit; 2021)

Studied Hartree-Fock theory to determine the ground state energy and separation of the hydrogen molecule. Performed the same calculation using variational quantum eigensolver on the qiskit statevector simulator.

Modelling vibrational modes in solids, classical interpretation. (implemented in Python; Physics Institute of Science and Technology; 2020)

Studied tight binding problem in 2D lattice to solve for energy bands for different configurations analytically as well as using Python script.

Modelling Free Fall and Viscous Laminar Flow. (implemented in Java; 2019)

Personal Details

ADDRESS

23 Anson Road
Flat 2
Manchester
United Kingdom
M14 5BZ

CONTACT INFORMATION

+447809763384 (UK)
+37067776313 (LT)
ksenija.kovalenka@student.manchester.ac.uk
http://linkedin.com/in/ksenija-kovalenka

DATE OF BIRTH

2000/12/21

PERSONAL WEBSITE

Computational projects

SEPTEMBER 2020 — JUNE 2021, THE UNIVERSITY OF MANCHESTER

Monte Carlo Techniques Penetration of Neutrons Through Shielding. (implemented in Python, Jupyter)

Numerical Integration of Differential Equations: The Damped Harmonic Oscillator. (implemented in Python, Jupyter)

Measuring Spreading Law: using curve fitting to experimental data to determine spreading law for picolitre droplets. (implemented in Python, Jupyter)

Doppler Spectroscopy: analysis of exoplanets using function minimization. (implemented in Python)

Gained strong programming skills and mastered their applications in data analysis, simulation, and presentation. Progressed in code debugging and performance optimisation. All projects completed to high standard of required style and efficiency.

Other Experience

Physics and Maths Tutor, MyTutor.com

SEPTEMBER 2019 — PRESENT

Developed strong interpersonal skills, practiced presenting and conveying ideas. Improved organisation and time management skills due to a freelance nature of the role. Gained many satisfied reviews and valuable feedback.

Supernovae Foundation Member

APRIL 2021 — PRESENT

Joined organisation helping young women pursuing career in physics. Attended webinars on general skill training such as time management or productivity and engaged with the community to develop communication skills.

Volunteering and Social Impact

Dig Deep Kenya

OCTOBER 2021 — PRESENT

Currently involved in fundraising for the residents of Kenya to have access to clean water and hygiene via organisation of various events and campaigns.

PASS leader

SEPTEMBER 2020 — JUNE 2021

Assisted learning of a group of first year students to help them settling well into the university environment and achieve their academic goals.

Horse Sanctuary summer volunteer

JULY 2018

Duties involved handling, training and basic care for rescued horses, site maintenance.

Skills

Software and programming: Python (Proficient), C++ (basic), Java (basic), LaTeX (basic), Microsoft Office.

Languages: English (Fluent), Russian (Native), Lithuanian (Fluent).

Other Interests

Horse riding, Polo, Visual Arts.