Daniel Kalvik

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Key Qualifications

- I have a M.Sc in physics with a specialization in accelerator physics.
- I have experience with machine learning in Python.
- I have experience with coding in MATLAB, Python and C++ to make numerical calculations and to model physical systems.
- I have experience using Unix and git.
- I have an excellent understanding of math and physics, and I am well versed in problem-solving.
- I am committed to apply my education in practice to contribute to a better future.
- I am efficient, independent, responsible, happy to collaborate, very curious and have a great capacity for learning.

Education

08.2022–06.2024

M.Sc Particle Physics – University of Oslo

I study nuclear and particle physics with a specialization in high energy physics. I'm using computer simulations to research new technology in particle accelerators that use plasma wakefields to accelerate electrons. I have gotten valuable experience programming in python through most courses I have completed, but most of all through the engineering of existing software to simulate the particle dynamics of said electrons.

During my degree I have also gotten a working knowledge of C++ through a comprehensive course on computational physics, where I gained experience in object oriented programming, Monte Carlo simulations, parallelization and other numerical methods.

I have gotten experience in instrumentation and methods in nuclear and particle physics, applications of accelerators and beams, statistical mechanics, relativistic quantum field theory, and modern particle physics.

For my Master thesis I researched the effects of betatron radiation in plasma-wakefield accelerators through numerical simulations. During the project I modeled the necessary physics in a lagrer start-to-end framework designated to simulating all aspects of a plasma-accelerator facility with multiple stages. During the project, I gained both experience in developing code in a larger collaboration, as well as knowledge in the field of accelerator physics.

08.2019–06.2022

B.Sc Energy and Environmental Physics – NMBU - Norwegian university of life sciences

I have studied environmental physics and renewable energy with a specialization in energy physics. The study has given me a basic education in physics and mathematics. I have knowledge of electrical circuits, motors and generators. The degree have also given me knowledge about the most important renewable energy resources, such as solar energy, bioenergy, wind power and hydropower, in addition to nuclear power and the traditional energy resources. I have also learned about radioactivity, radiation and how radiation affects people and nature, the atmosphere, climate and climate change.

Additionally, I have challenged myself with supplementary courses in applied machine learning, solid state physics, plasma physics, harmonic oscillations and waves, and quantum mechanics. All of this while working 20-30% and maintaining an average between A and B.

Work experience

08.2024 **PhD student**, University of Oslo

During my PhD I will research stability conditions in plasma-wakefield accelerators, conduct experiments at SLAC and/or DESY, and analyze data. My PhD is funded by the SPARTA project, which aims to provide the necessary knowledge/solutions to create a medium sized accelerator facility which is suitable for strong-field quantum-electrodynamics experiments. The motivation for this is to bridge the gap between current plasma-accelerator technology, and the next generation particle collider.

06.2023–08.2023 **Summer Student**, Norwegian Defence Research Establishment

During my time as a summer student, I have contributed to the nuclear preparedness of Norway by gathering and explaining information about a nuclear reactor which is suspected of becoming operational in Russian submarines in the future.

02.2022–05.2022 **Teaching Assistant, Electrodynamics**, NMBU

In this position, I have helped students understand concepts in electric and magnetic fields and how to calculate them. I have also assisted the students in modeling of electrodynamic systems using COMSOL multiphysics.

09.2021–12.2021 **Teaching Assistant**, NMBU

As a teaching assistant in 1st and 2nd year engineering subjects, I have helped students grasp concepts in basic physics, math and ICT subjects.

06.2021–08.2021 **Course Leader**, Forskerfabrikken AS

As a course leader with the scientist factory, I have had the privilege passing on my knowledge of energy and chemistry to childern in the age of 10-12. From this I have improved upon my ability to convey difficult conscepts in a manner that is easier to grasp.

02.2021–05.2021 **Teaching Assistant, Calculus**, NMBU

As a teaching assistant in Calculus 2, I have helped students understand vector-calculus and integration in multiple dimensions.

01.2019 **Course Leader**, Vitenparken Campus Ås

I present relevant information in biotechnology to high school students and oversee/help them in carrying out their own experiments.

10.2017–01.2021 **Security Guard**, Securitas AS

As a security guard, I have worked with security at a construction site, in office buildings and various locations in Oslo.

09.2016–09.2017 **Military Service**, The Norwegian Defence

In the Norwegian navy I worked as a fire fighter soldier. During my final months, I had senority among the soldiers and experienced leading a team as well as being part of one.

Roles

08.2024 **ECFA Early career researcher**

As part of the European Committee for Future Accelerators early career researchers, I will provide input into the European strategy for future particle accelerators.

Courses

2017 **Boat License**

2017 **Fork Truck License**

03.2016 **Drivers License Class B**