Nolan Koblischke

Curriculum Vitae

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Education

2019–2023 **Bachelor of Science**, University of British Columbia, GPA – 4.32/4.33 - 95%.
Major in Physics, Minor in Computer Science

2021 **Neural Networks & Deep Learning**, Coursera.

Research

Summer 2022 **Research Internship**, École Polytechnique Fédérale de Lausanne.
Improved a distance ladder method to measure the expansion rate of the universe. Increased the accuracy of the Tip of The Red Giant Branch calibration of the Large Magellanic Cloud by using period-luminosity selections of Long Period Variable stars under the supervision of Dr. Richard I. Anderson.

Awards and Honours

2019 - 2022 UBC Presidential Scholars Award

2019 Tuum Est Experiential Award

2019 - 2021 Dean's List

2019 - 2021 Deputy Vice-Chancellor Scholarship

2020 Honourable Mention for 2nd Year Physics

2021 Honourable Mention for Upper Year Physics

2021 McGill Physics Hackathon Winner - Machine Learning Challenge

Notable Courses

PHYS 321 **Stellar Astrophysics** *Stellar structure and evolution, main sequence stellar models, post main sequence evolution. Developed a stellar structure model using numerical integration and the stellar structure equations.*

COSC 301 **Data Analytics** *Data computation, visualization, and analysis. Automation with scripting.*

COSC 304 **Databases** *Advanced SQL querying, database-driven applications, working with database technologies.*

COSC 407 **Parallel Computing** *Design and implementation of parallel computing programs, parallel architectures (distributed, multicore, GPU), and standard parallel libraries (OpenMP, CUDA, MPI).*

Clubs and Projects

2019–Present **Payload R&D**, *Atmospheric Cloud Chamber of the Okanagan*.

Designed cooling and cloud formation subsystems, researched cosmic ray physics, theorized expected observations and built ground tests of the cloud chamber. This experiment will detect particles originating from cosmic ray decay in the stratosphere. The experiment will be launching from Sweden in 2022 on a stratospheric balloon. Website

2019–Present **Co-Founder**, *Astronomy Club*.

I co-founded the club and organized all the events, mainly public star-gazing nights. Assembled a team to grow the club. The mission is to allow students to share their interests and conduct astronomy outreach for the public.

2021 **Winner**, *McGill Physics Hackathon*.

In 24 hours, we used a Physics Informed Neural Network to create a coupled ODE system to model climate change. I implemented the model with the DeepXDE package, pre-processed the data, developed the ODE system, and tuned the hyperparameters. GitHub

2021 **Participant**, *QHack 2022*.

We placed 29th out of 800 teams in a quantum computing coding tournament. GitHub

2019–2021 **Organizer**, *Student Interdisciplinary Research Club*.

The goal is to support undergraduate research projects on campus. I helped to establish the club, make the website, and plan for the future. Website

2019–2020 **Avionics Team**, *Aeroclub - Rocketry Division*.

Worked on the avionics and simulation for a self-landing rocket. Worked on thrust vector control.

Computer skills

C (OpenMP, CUDA), Java, Python (Matplotlib, NumPy, Pandas, SciPy, Keras), SQL (MySQL, SQL Server), LaTeX, Excel, Linux, Git, Matlab, TopCat

Research Interests

- Astrophysics: Stellar Structure and Evolution, Galactic Structure, Cosmology
- Machine Learning: Accelerating Scientific Research, Physics Informed Neural Networks

Languages

English **Native Speaker**

French **Beginner to Intermediate**

Experience

Vocational

2017–Present **Math and Science Tutor**.

Worked as a private tutor for multiple students. Subjects included university calculus and chemistry. Developed an ability to teach difficult concepts in an effective fashion.

Memberships

RASC – Royal Astronomy Society of Canada

SEDS – Students for Exploration and Development of Space

CAP – Canadian Association of Physicists

Hobbies

I enjoy hiking, biking, skiing, cinematography and photography.