

# Samuel Jankových

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🌐 <https://samueljankovych.com>

## EMPLOYMENT

University of Amsterdam, Faculty of Science  
PhD candidate

September 2025 –  
Amsterdam, Netherlands

## EDUCATION

Nikhef/University of Amsterdam, Faculty of Science, Institute of Physics  
PhD in Particle Physics

September 2025 –  
Amsterdam, Netherlands

Charles University, Faculty of Mathematics and Physics

Mgr. (MSc.) in Particle and Nuclear Physics, Grade Average: 1.00 (1 is best)

September 2023 – June 2025

Prague, Czech Republic

Charles University, Faculty of Mathematics and Physics

Bc. (BSc.) in Physics, Grade Average: 1.00 (1 is best)

September 2020 – June 2023

Prague, Czech Republic

Terascale Monte Carlo School, DESY

Lectures and Tutorials

November 2023

Hamburg, Germany

HASCO, Georg August University of Göttingen

Summer School Grade: A (A is best)

July 2022

Göttingen, Germany

8-year Gymnasium Tilgnerova

Primary and Secondary education, *Leaving exams: All grade 1* (1 is best)

September 2012 – June 2020

Bratislava, Slovakia

## COURSEWORK / SKILLS

- Physics Fundamentals
- Machine Learning
- Deep Learning
- Deep Neural Networks
- Advanced Quantum Mechanics
- General Relativity
- Computing on HPC clusters
- GPU computing
- Linux administration

## PUBLICATIONS

Constituent-Based Quark Gluon Tagging using Transformers 

ATLAS Collaboration

2023

ATLAS Public Note

## TALKS AND CONFERENCES

*q/g* tagging: development and calibration  
two talks

September 2025

ATLAS Hadronic Identification Workshop, CERN

Jet Tagging: Calibrations

longer talk

September 2025

ATLAS Hadronic Calibration Workshop, Sheffield

<b>Data-driven calibration of a Transformer-based q/g Jet Tagger</b> <i>talk</i>	<b>March 2025</b> <i>ATLAS ML Workshop, CERN</i>
<b>Quark Gluon Jet Taggers in Release 22</b> <i>talk</i>	<b>August 2024</b> <i>ATLAS Hadronic Calibration Workshop, Ottawa</i>
<b>Constituent based Quark/Gluon Jet Tagging</b> <i>poster</i>	<b>July 2024</b> <i>ICHEP, Prague</i>
<b>Constituent based Quark/Gluon Jet Tagging</b> <i>talk</i>	<b>November 2023</b> <i>ML4Jets, Hamburg</i>
<b>Constituent based Quark/Gluon Jet Tagging</b> <i>presentation</i>	<b>September 2023</b> <i>ATLAS Hadronic Calibration Workshop, Valencia</i>

## THESES

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<b>Calibration of an AI-based quark/gluon tagger</b> <a href="#">↗</a>   <u>Master Thesis</u>	<b>2025</b>
<ul style="list-style-type: none"> <li>• supervised by Mgr. Vojtěch Pleskot Ph.D.</li> <li>• <b>Full calibration</b></li> <li>• <b>ATLAS research</b></li> <li>• Quark and Gluon Jets</li> <li>• Full phase space</li> <li>• Jet Topics</li> <li>• Efficiency measurement</li> <li>• Systematic uncertainties</li> <li>• <a href="https://dspace.cuni.cz/handle/20.500.11956/199554?locale-attribute=en">https://dspace.cuni.cz/handle/20.500.11956/199554?locale-attribute=en</a></li> </ul>	
<b>Quark/Gluon Jet Tagging</b> <a href="#">↗</a>   <u>Bachelor Thesis</u>	<b>2023</b>
<ul style="list-style-type: none"> <li>• supervised by Mgr. Vojtěch Pleskot Ph.D.</li> <li>• <b>ATLAS presentations</b></li> <li>• <b>continuing research at ATLAS</b></li> <li>• Quark and Gluon Jets</li> <li>• Jet Tagging</li> <li>• Jet Constituents</li> <li>• Monte Carlo Simulations</li> <li>• Transformer Architecture</li> <li>• <a href="https://dspace.cuni.cz/handle/20.500.11956/182597?locale-attribute=en">https://dspace.cuni.cz/handle/20.500.11956/182597?locale-attribute=en</a></li> </ul>	

## PROJECTS

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<b>Measurement and simulation of a temperature field</b> <a href="#">↗</a>   <u>School Project</u>	<b>2019</b>
<ul style="list-style-type: none"> <li>• Heat Equation</li> <li>• Thermal Imaging</li> <li>• Thermal Conductivity</li> <li>• <a href="https://arxiv.org/abs/1909.01460">https://arxiv.org/abs/1909.01460</a></li> </ul>	
<b>Fake <math>\tau</math> background in <math>\tau^*</math> search</b> <a href="#">↗</a>   <u>Student Faculty Grant</u>	<b>2021</b>
<ul style="list-style-type: none"> <li>• Fake Factor Method</li> </ul>	

- $\tau$  classification
- ATLAS Collaboration
- [https://drive.google.com/file/d/1k7So9AuAj62re\\_s0pZRw0U2cgkDUlR0y/view?usp=sharing](https://drive.google.com/file/d/1k7So9AuAj62re_s0pZRw0U2cgkDUlR0y/view?usp=sharing)

## Jet Identification Deep Neural Networks | Python Framework

2023

- Software Package
- Deep Learning
- Tensorflow
- Jet Physics
- Quantum Chromodynamics
- <https://github.com/jansam123/JIDENN>

## EXPERIENCES

### BEZ Transformers a.s., *Intern*

2019

*BEZ Transformers a.s. is a world-wide transformer manufacturer.*

*Bratislava, Slovakia*

- CAD modeling of transformers
- Fluid flow modeling using Ansys Fluent
- Transformer cooling analysis

## PROFESSIONAL INTERESTS

- |                                 |  |                             |
|---------------------------------|--|-----------------------------|
| • CERN research                 | • Jet Physics                          | • Transformer Architectures |
| • Particle Physics              | • Quantum Chromodynamics               | • Software Design           |
| • Standard Model Physics        | • Deep Neural Networks in HEP research | • Advanced Statistics       |
| • Beyond Standard Model Physics |  | • GPU computing             |

## AWARDS AND GRANTS

### GAUK, Charles University Grant Agency

2024

2 year grant     *Amount: 6600 € per year*

*Charles University, Prague*

### Price of the Rector of Charles University

2023

Best bachelor student in the field of Natural Sciences     *Amount: 800 €*

*Charles University, Prague*

### Price of the Dean of the Faculty of Mathematics and Physics

2023

Second best bachelor thesis in the field of Physics     *Amount: 320 €*

*Charles University, Prague*

### Prize of the Minister of Education, Youth and Sports

2023

Best bachelor student in Czech Republic     *Amount: 2000 €*

*Charles University, Prague*

### Czecho-Slovak Student Scientific Conference in Physics

2023

2.place     *Prize: 130 €*

*Charles University, Prague*

### Scholarship for Excellent Study Results

2022

2nd year Bc.     *Amount: 770 €*

*Charles University, Prague*

### Scholarship for Excellent Study Results

2021

Summer Term 1st year Bc.     *Amount: 770 €*

*Charles University, Prague*

### Scholarship for Excellent Study Results

2020

Winter Term 1st year Bc.     *Amount: 640 €*

*Charles University, Prague*

## TECHNICAL SKILLS

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**Languages:** Python, C, C++

**Frameworks:** ROOT, Tensorflow, Scikit-learn, Uproot, Hugo

**Technologies:** MacOS, Linux, Git, VS Code, Docker, Slurm, Condor, L<sup>A</sup>T<sub>E</sub>X

## SPOKEN LANGUAGES

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**English:** C2

**German:** B1

**Slovak:** native