

# Samuel Jankových

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## EDUCATION

**Charles University, Faculty of Mathematics and Physics** **2023 –**  
Mgr. (MSc.) in Particle and Nuclear Physics *Prague, Czech Republic*

**Charles University, Faculty of Mathematics and Physics** **2020 – 2023**  
Bc. (BSc.) in Physics *Diploma with Honours* Grade Average: 1.00 (1 is best) *Prague, Czech Republic*

**HASCO, Georg August University of Göttingen** **2020**  
Summer School Grade: A (A is best) *Göttingen, Germany*

**8-year Gymnasium Tilgnerova** **2012 – 2020**  
Primary and Secondary education *Leaving exams: All grade 1 (1 is best)* *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**  **2023**  
*ATLAS Collaboration* *ATLAS Public Note*

## TALKS AND CONFERENCES

**Constituent based Quark/Gluon Jet Tagging** **2024**  
*poster* *ICHEP, Prague*

**Constituent based Quark/Gluon Jet Tagging** **2023**  
*talk* *ML4Jets, Hamburg*

**Constituent based Quark/Gluon Jet Tagging** **2023**  
*presentation* *ATLAS Hadronic Calibration Workshop, Valencia*

## THESES

**Quark/Gluon Jet Tagging**  | Bachelor Thesis **2023**

- supervised by Mgr. Vojtěch Pleskot Ph.D.
- ATLAS presentations
- continuing research at ATLAS
- Quark and Gluon Jets

- Jet Tagging
- Jet Constituents
- Monte Carlo Simulations
- Transformer Architecture
- <https://dspace.cuni.cz/handle/20.500.11956/182597?locale-attribute=en>

## PROJECTS

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### Measurement and simulation of a temperature field [↗](#) | School Project 2019

- Heat Equation
- Thermal Imaging
- Thermal Conductivity
- <https://arxiv.org/abs/1909.01460>

### Fake $\tau$ background in $\tau^*$ search [↗](#) | Student Faculty Grant 2021

- Fake Factor Method
- $\tau$  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

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### **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

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|---------------------------------|--|-----------------------------|
| • 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

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### 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:** C1

**German:** B1

**Slovak:** native