

# Aleksandra Poreba

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## EDUCATION

### **CERN AND RUPRECHT-KARLS-UNIVERSITÄT HEIDELBERG** COMPUTING SYSTEMS GROUP

#### **PHD IN COMPUTER SCIENCE** | Oct 2022 - present

My research focuses on heterogeneous computing in the ATLAS High-Level Trigger, in detail the particle track reconstruction. I am considering two approaches, the first one follows the traditional track reconstruction steps: track seeding, track fitting, and track filtering, where only the first step is GPU accelerated. The second projects replaces the traditional pipeline with a Graph Neural Network.

The work has been sponsored by the Wolfgang Gentner Programme of the German Federal Ministry of Education and Research.

### **AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY** FACULTY OF PHYSICS AND APPLIED COMPUTER SCIENCE

#### **MASTERS IN APPLIED COMPUTER SCIENCE WITH MODELING AND DATA ANALYSIS** | Feb 2020 - Jul 2022

During the Master's studies, I spent one year at CERN as a Technical Student. My main focus was the upgrade of performance estimations and monitoring framework. Moreover, I contributed to various Trigger Core Software improvements and features and started the Online Trigger Expert training, the first-level on-call contact for Trigger-related issues during the ATLAS data-taking.

#### **BACHELORS IN APPLIED COMPUTER SCIENCE** | Oct 2016 - Feb 2020

The Bachelor's thesis focused on the upgrade of the HLT Online Signature Rates monitoring, consisting of new histograms addition and code adaptation for multi-threaded processing.

## PUBLICATIONS

### **TRIGGER PERFORMANCE MONITORING AND RATE PREDICTIONS PREPARATION FOR RUN 3 AT ATLAS EXPERIMENT**

Computing and Informatics Journal Vol. 40 No. 4 (2021)

DOI: [https://doi.org/10.31577/cai\\_2021\\_4\\_833](https://doi.org/10.31577/cai_2021_4_833)

### **OPERATIONAL EXPERIENCE WITH THE NEW ATLAS HLT FRAMEWORK FOR LHC RUN 3**

Proceedings of 26th International Conference on Computing in High Energy Nuclear Physics, planned publishing spring 2024

Link: <https://cds.cern.ch/record/2856357>

### **THE ATLAS TRIGGER SYSTEM FOR LHC RUN 3 AND TRIGGER PERFORMANCE IN 2022**

Submitted to JINST

arXiv: <https://arxiv.org/abs/2401.06630>

## CONFERENCE TALKS

**CHEP 2023** | NORFOLK, VIRGINIA, USA | 8-12 May 2023

Operational experience with the new ATLAS HLT framework for LHC Run 3.

**KKIO 2021** | CRACOW, POLAND | 21-22 September 2021

The Trigger performance monitoring and rate predictions preparation for Run 3 at ATLAS experiment.

## TEACHING

**CERN SUMMER STUDENT PROGRAMME** | CERN | Jul - Sep 2023

Supervisor of a Summer Student creating an application for automated bookkeeping of physics data with information relevant from the ATLAS Trigger perspective.

**INTERNATIONAL MASTERCLASSES HANDS ON PARTICLE PHYSICS** | CERN/ONLINE | 2023, 2024

Moderator of summary sessions of ATLAS Z path masterclasses for high school students.

## SCHOOLS

**HIGHRR LECTURE WEEK** | HEIDELBERG | Sep 2023

Lectures covering different machine learning topics, including Graph Neural Networks.

**PUMPS+AI 2023** | BARCELONA | Jun 2023

Summer School with a focus on developing applications with massively parallel computing resources including GPU accelerators.

**SMARTHEP SCHOOL ON COLLIDER PHYSICS AND MACHINE LEARNING** | GENEVA | Jan 2023

Lectures covering experimental collider physics, theoretical physics, and machine learning.

**JENNIFER2 SUMMER SCHOOL** | KEK/ONLINE | 20-27 Jul 2020

Particle Physics and Detectors Summer School about physics research performed at KEK, particularly by the Belle II and T2K collaborations.