

# Kadir Murat Tastepe

✉ ktastepe@cern.ch |  linkedin.com/in/kadir-tastepe |  kadirtastepe

## PROFILE

M.Sc. Physics graduate with specialized in computational high-energy physics, experienced in developing FPGA-based detector algorithms and real-time data processing systems. Passionate about understanding how the universe works and eager to develop new scientific skills to contribute to groundbreaking research in high-energy physics.

## EDUCATION

<b>Ruprecht-Karls-Universität Heidelberg</b> <i>M.Sc. in Physics</i> <ul style="list-style-type: none"><li>Master's Thesis: High-Level Synthesis-Based FPGA Implementation of the General Triplet Track Fit Algorithm for Real-Time Particle Tracking</li></ul>	08.09.2025 Heidelberg, Germany
<b>Hacettepe University</b> <i>B.Sc. in Engineering Physics</i> <ul style="list-style-type: none"><li>Bachelor's Thesis: Monte Carlo Simulations in High Energy Physics.</li></ul>	04.10.2021 Ankara, Turkey
<b>Universität Duisburg-Essen (Erasmus+)</b> <i>B.Sc. in Physics</i>	05.10.2017 - 31.03.2018 Duisburg, Germany

## WORK EXPERIENCE

<b>SAP SE</b> <i>Machine Learning Engineer / Working Student (On-site)</i> <ul style="list-style-type: none"><li>Developed end-to-end <b>Retrieval-Augmented Generation (RAG)</b> pipelines using <b>vector search</b> and <b>large language models</b> for intelligent question answering, and built <b>Flask APIs</b> to serve these features in <b>cloud-based applications</b>.</li><li>Created <b>anonymized workflows</b> for model training, and <b>SlackBot</b> interactions.</li><li>Explored the capabilities, limitations, and potential bottlenecks of both <b>Agentic AI</b> and <b>Generative AI models</b> to inform <b>model selection, optimization, and deployment strategies</b>.</li></ul>	Walldorf, Germany 08.07.2024 – 30.09.2025
<i>Big Data Analyst / Working Student (On-site)</i> <ul style="list-style-type: none"><li>Tracking several release-dependent adoption tasks for <b>Identity and Access Management (IAM)</b>.</li><li>Monitored and created tickets for <b>Root Cause Analysis (RCA)</b> of the <b>cloud foundation software components</b>.</li><li>Maintained <b>Wiki pages, JIRA dashboards, and custom filter queries</b> to enhance cross-functional transparency and alignment with key stakeholders.</li></ul>	15.06.2023 – 14.06.2024
<b>Paul Scherrer Institute (PSI)</b> <i>Student Researcher (On-site)</i> <ul style="list-style-type: none"><li>Measured the <b>charged-pion lifetime</b> and <b>branching ratio to electrons vs. muons</b> including systematic and statistical uncertainties at the <b><math>\pi</math>M1 beamline</b> using a detector setup of <b>scintillators</b>, a <b>degrader</b>, and a <b>calorimeter</b>.</li></ul>	Villigen, Switzerland 01.10.2023 – 13.10.2023
<b>Physikalisches Institut Heidelberg</b> <i>Scientific Assistant (On-site)</i> <ul style="list-style-type: none"><li>Investigated the impact of increased <b>magnetic field strength</b> and <b>sensor thickness</b> on the physics performance of the <b>Mu3e</b> experiment to guide the <b>optimization of detector design</b>.</li><li>Simulated the spectrometer's <b>magnetic field</b> using <b>neodymium magnets</b> (<math>\text{Nd}_2\text{Fe}_{14}\text{B}</math>) to separate <b>electrons</b> and <b>positrons</b>, implemented in <b>Mathematica</b>.</li></ul>	Heidelberg, Germany 01.07.2022 – 30.09.2022
<b>The Scientific and Technological Research Council of Turkey</b> <b>High Performance and Grid Computing Center</b> <i>Internship (Remote)</i> <ul style="list-style-type: none"><li>Project: TRUBA2023 (Turkish Science e-Infrastructure)</li></ul>	Ankara, Turkey 15.03.2021 – 15.09.2021

**The Henryk Niewodniczański Institute of Nuclear Physics**  
**Polish Academy of Sciences(IFJ-PAN),**  
**Particle Physics Summer Student Programme**  
*Intern/Summer Student (On-site)*

Kraków, Poland

08.07.2019 – 22.08.2019

- Data analysis on **charged particle production** in **Xe-Xe collisions**.
- Simulated **laser light propagation** for the **Baikal-GVD** calibration system, implemented in **MATLAB** and **C++**.

## SCHOOLS

---

<b>Max Planck IPP Summer University for Plasma Physics and Fusion Research</b> <i>Summer Student (On-site)</i>	Greifswald, Germany 12.09.2022 – 16.09.2022
<b>Wolfram Summer School</b> <i>Visitor (Remote)</i>	28.06.2021 – 16.07.2021
<b>Istanbul University Particle Physics Winter School (PFBU-2020)</b> <i>Winter Student (On-site)</i>	Istanbul, Turkey 03.02.2020 – 07.03.2020

## COMPUTING SKILLS

---

**Operating Systems:** Mac OS, Linux, Windows  
**Programming Languages:** C/C++, Python, Bash, L<sup>A</sup>T<sub>E</sub>X, MATLAB, Mathematica  
**Simulation & Analysis:** ROOT, MadGraph, MadAnalysis, Pythia, Delphes, Geant4  
**Tools:** Vitis HLS, Vivado, CUDA, Docker, Cloud Foundry, OpenSearch, Flask, OpenAI, LangChain, Microsoft Office  
**Build Software:** Make  
**Version Control:** Git, BitBucket  
**Databases:** PostgreSQL

## POSTER PRESENTATIONS

---

<b>Conference on Computing in High Energy Physics (CHEP)</b> <i>FPGA Implementation of the General Triplet Track Fit</i>	Kraków, Poland 23.10.2024
-----------------------------------------------------------------------------------------------------------------------------	------------------------------

## CAMPUS ACTIVITIES

---

<b>Hacettepe University Physics Society</b> <i>Founding Member</i>	Ankara, Turkey 13.11.2017 – 04.10.2021
-----------------------------------------------------------------------	-------------------------------------------

- Initiated and organized interdisciplinary conferences, workshops, excursions, and public outreach events to promote physics and foster inclusive scientific engagement across diverse age groups and communities.

## LANGUAGE SKILLS

---

**Turkish:** Native Language  
**English:** C1 (CEFR)  
**German:** B1 (CEFR)  
**French:** A1 (CEFR)

## FIELD OF INTERESTS

---

**High Energy Physics**  
**Computational Science**  
**Mathematical Methods in Physics**  
**Machine Learning**

## HOBBIES

---

Hiking, Backpacking, Cooking, Kayaking, Playing Electric Guitar, Birdwatching, Science Communication