KADİR MURAT TAŞTEPE

• ktastepe@cern.ch

SUMMARY

I am a physics M.Sc. student with a keen interest in computational science. I have strong analytical and computational skills as well as the experience of working in a research environment. I am willing to learn how does universe works and develop new scientific skills, as in the future I am planning to be a researcher in High Energy Physics.

EDUCATION

Ruprecht-Karls-Universität Heidelberg, Heidelberg, Germany

- M.Sc. in Physics — 28 Apr 2022 – Present

Hacettepe University, Beytepe, Ankara, Turkey

- M.Sc. in Mathematics — 31 Jan 2022 – Present

Hacettepe University, Beytepe, Ankara, Turkey

- B.Sc. in Physics Engineering — 04 Oct 2021

Duisburg-Essen University (Erasmus+), Duisburg, Germany

- B.Sc. in Physics — Oct 2017 – Mar 2018

INTERNSHIP EXPERIENCE

SAP, Walldorf, Germany (Working Student) — 15 Jun 2023 – Present

- Business & Technology Platform
- S4/HANA Cloud Foundation

Physikalisches Institut Heidelberg (Scientific Assistant) — 01 Jul 2022 –31 Jan 2023

- Mu3e Experiment: based at PSI which searches for the lepton flavour violating decay $\mu^+ \longrightarrow e^+e^-e^+$. (Reference information available on request)

Max Planck IPP Summer University for Plasma Physics and Fusion Research, Greifswald, Germany — 12 Sep 2022 – 16 Sep 2022

Wolfram Summer School (Visitor) — 28 Jun 2021 – 16 Jul 2021

The Scientific and Technological Research Council of Turkey High Performance and Grid Computing Center(TUBITAK 2247 - ULAKBIM), Ankara, Turkey

- TRUBA2023(Reference information available on request) — 15 Mar 2021 – 15 Sep 2021

Istanbul University Particle Physics Winter School (PFBU-2020), İstanbul, Turkey

- The processing of simulated data from the LHC collisions using an Analysis Description Language and its runtime interpreter called CutLang. Data Analysis, ROOT, CutLang. — 03 Feb 2020 – 07 Feb 2020

The Henryk Niewodniczański Institute of Nuclear Physics Polish Academy of Sciences(IFJ-PAN), Particle Physics Summer Student Programme, Kraków, Poland

- The ATLAS Experiment Department (NZ14) — 08 Jul 2019 – 02 Aug 2019
  - Project: Charged Particle Production in Xe-Xe Collisions.(Reference information available on request)
  - Focus: Data Analysis, Compatibility of ATLAS (CERN) data and MC events.
- Department of Cosmic Ray Research and Neutrino Studies (NZ15) — 04 Aug 2019 – 22 Aug 2019
  - Project: Baikal-GVD (Reference information available on request)
  - Focus: Simulation of the Laser Light Propagation for the Baikal-GVD Calibration System, implemented in MATLAB and C++.

SIGNIFICANT COURSEWORK

Master Project: FPGA Implementation of the General Triplet Track Fit with High-Level Synthesis
An early-stage FPGA implementation of the General Triplet Track Fit algorithm, exploring its potential peformance across various number of detector layers to accelerate track fitting process in future high energy physics experiments.

Advanced Particle Physics Project: Charged Pion Lifetime Measurement at PSI
The lifetime and the branching ratio of the charged pion were measured over the course of two weeks at the PSI (Paul Scherrer Institut) in Villigen, Switzerland, at the secondary beam line $\pi M1$. Using a setup of scintillators, a degrader and a calorimeter, the lifetime was found to be $\tau_\pi = 26.35 \pm 0.78(syst.) \pm 0.25(stat.)\ ns$.

GPU Accelerated Computing
Simple algorithm design performance improvements achieved with GPUs and multiple nodes were analyzed, and the results were compared with Amdahl's Law to understand the impact of communication overhead and load balancing on speedup.
(Introduction to GPU Accelerated Computing Course)

Bachelor Project: Monte Carlo Simulations in High Energy Physics
Generating Higgs pair production events at 14 TeV proton-proton collisions and analysing transverse momentum and pseudorapidity distributions by using combination of MadGraph, Pythia, Delphes and ROOT.

Laser Light Propagation
Dispersion and pulse compression with prism/grating system algorithm, implemented in MATLAB. (Ultrashort Time Physics Class)

LSF and MTF Measurement of a Digital Camera
Analysis of effects of spatial frequency of objects to spatial resolution of a digital camera implemented in Mathematica and MATLAB. (Fundamentals of Medical Imaging Class)

Simulation of Rutherford's Alpha Scattering Experiment
Incoming positively charged alpha particle repelled by positive nucleus, implemented in MATLAB. (Nuclear Physics Class)

CAMPUS ACTIVITIES

Physics Society, Hacettepe University

- Board Member — Oct 2019 – Oct 2021
- President — Sep 2018 – Oct 2019
- Founder Member — Nov 2017

LANGUAGES

- Turkish: Native language
- English: C1(CEFR)
- German: B1(CEFR)
- French: A1(CEFR)

COMPUTING SKILLS

- **Programming Skills**
  - LaTeX, MATLAB, Mathematica, C/C++, Python, ROOT(Data Analysis Framework), Autodesk 3DS Max, CutLang, MadGraph, MadAnalysis, Pythia, Delphes, Geant4, Vitis HLS, CUDA
- **Operating Systems**
  - DOS, Linux(Ubuntu, CentOS 7, OpenSUSE), Windows, Mac OS

FIELD OF INTERESTS

- High Energy Physics
- Computational Science
- Mathematical Methods in Physics
- Data Analysis

HOBBIES

Trekking, Hiking, Backpacking, Playing Electric Guitar, Birdwatching, Science Communication, Rowing