Daniel Abadjiev

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Education

Northeastern University — Boston, MA

Double Math and Physics major, Computer Science Minor — Expected May 2024

GPA: 3.98/4.0; Dean's List; Lawrence Award 2021; Alumni Sponsored Undergraduate Research Fellowship 2023

- Probability and Statistics, Thermodynamics and Statistical Mechanics, Electricity and Magnetism 1 & 2, Advanced Group Theory, Classical Dynamics, Quantum Mechanics, Principles of Experimental Physics Capstone, Real Analysis

Publications

Abadjiev DS, et al. Daily rhythm of dynamic cerebral autoregulation in patients after stroke. Journal of Cerebral Blood Flow & Metabolism. 2023;0(0). doi:*10.1177/0271678X231153750*

Research Experience

Compact Muon Solenoid (CMS) Experiment at CERN — Meyrin, Geneva, Switzerland

Electromagnetic Calorimeter (ECAL) Subsystem, Research Assistant — June 2023 – December 2023

- Developed automated functionality testing of Very Front End (VFE) upgrade electronics for the planned upgrade of the CMS detector for the High Luminosity Large Hadron Collider (HL-LHC). Presented work at ECAL Days in Rome.
- Assisted with a large-scale system test of upgrade electronics with a high energy electron test beam. Included optical fiber management, data acquisition development, and detector cooling and performance safety monitoring.
- Continuing to analyze test beam data and assist in a physics analysis remotely as a part-time research assistant.
- Presented test beam results to the CMS collaboration at an Upgrade Plenary Talk at December 2022 CMS Week

Brigham & Women's Hospital at Harvard Medical School — Boston, MA

Medical Biodynamics Program, Research Assistant — June 2019 – December 2023

- Analyzed phase advance in Blood Flow Velocity vs Blood Pressure for measuring Cerebral Autoregulation (CA) in Matlab, used for a project examining daily rhythms in CA in patients after stroke.
- Presented CA work at poster talks at the international 2021 Cerebral Autoregulation Network (CarNet) conference and the 2023 Society of Biological Rhythms (SRBR) conference, and published results (first author).
- Managed EEG data and developed a Matlab application for Holo-Hilbert Spectral Analysis of EEGs. Tested software with real and artificial data, and optimized software efficiency.

Northeastern University — Boston, MA

Research Experience for Undergraduates, Research Intern — May 2022 – June 2022

- Collaborated with two students and a PhD student mentor to reproduce the results of a 2015 paper in Quantum Field Theory and wrote up results along with an introduction to the field.
- Explored renormalization and regularization in Quantum Field Theory and examined the renormalization group flow equations for massive scalar ϕ^4 theory and massless scalar ϕ^3 theory.

On Campus Involvement

- Math Club, Mathema: Mentored a younger student in the math program.
- Nustage Musical Theater Company. Assis. Music Director Fall 2021: Organized, planned, and led musical rehearsals.

Skills and Languages

- Java (proficient), Android Studio (proficient), C++ (familiar), HTML and CSS (familiar), Racket (familiar), Python (basic), Arduino IDE (basic), C (basic), Linux Terminal (basic), Visual Basic for Excel Macros (basic)
- MATLAB (proficient), Mathematica (proficient), LabWindows/CVI (familiar), LaTeX (familiar), JMP (basic)
- Adobe Premiere (proficient), Adobe Photoshop (familiar), Musescore (familiar), Audacity (basic)
- English (native), Bulgarian (fluent), French (workably fluent), German (basic)