

Charlie Perkins

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SKILLS

CORE SKILLS

Abstract Problem Solving • Numerical Methods • Public Speaking • Science Communication • Systems Modeling Software Development • Research Proficiency • Academic Writing

PROGRAMMING

Python • C++ • \LaTeX • C# \ .NET
JSON • Julia • Bash • Java • Rust
HTML \ CSS • PowerShell • Javascript
Git • Excel • Visual Studio • Visual Studio Code • Arduino-IDE • Apache Cargo • MinGW • Numpy • Matplotlib Scipy • Boost • CUDA • Multiprocessing • GNU/Linux

CONFERENCES

UK National Ion Beam Center User Day Dec 2024: Manchester Inhomogeneous Radiation Chemistry by Linear Expansion (MIRaCLE): Simulating Ion Beam Induced Chemistry
University of Manchester Undergraduate Physics Conference Apr 2024: Radiation Chemistry Automation

AWARDS

University of Manchester Science and Engineering Achievement Scholarship
UK Maths Challenge (2x Bronze, 1x Silver)
British Physics Olympiad (Gold)
St John's Ambulance Knowledge Awards
John Muir Award in Wildlife & Species Protection (Bronze and Silver)

LINKS

Bio: server.westernelectronics.co.uk
Github: [Chaddyfynn](#)
LinkedIn: [Charlie Perkins](#)
ORCID : 0009-0002-1360-7998

EXPERIENCE

UNIVERSITY OF MANCHESTER MANCHESTER MIRaCLE RESEARCH GROUP | VOLUNTARY RESEARCH INTERN

July 2024 - Present

- Development of simulations of ion tracks in water (from Kreipl 2009, Tran 2021) using MIRaCLE package
- Converted Monte Carlo-based initial conditions to a continuum model
- Review code changes, assess merge conflicts, bugs
- Develop Windows compatibility for MIRaCLE Julia package
- Research presented at MIRaCON 11 and UK National Ion Beam Centre 2024

DCF, DALTON NUCLEAR INSTITUTE | CASUAL TECHNICAL SUPPORT ASSISTANT

July 2024 - August 2024

- Creation of Python package 'AtomForge': API for IAEA NDS, dynamic numerical solution to N species nuclear decay Markov chain, and gamma spectrum prediction.
- Preliminary simulations of medical isotope production using IAEA MIB.
- Data validation using custom Python scripts to verify predicted post-irradiation medical isotope activity.

DCF, DALTON NUCLEAR INSTITUTE | SUMMER PLACEMENT STUDENT

July 2023 - August 2023

- Design, construction, and implementation of firmware, software, and hardware components for beamline experiment automation (C#, C++, Arduino).
- Assist side-projects in the laboratory (PhD students' projects) – UV-Vis spectrometry of irradiated capsules, sterilisation of capsules.
- Assist with experimental design for irradiation of MS2 bacteriophage and MS2 RNA with He^{2+} ions on DAFNE particle accelerator experiments (ongoing, voluntary)

PROJECTS

TOTAL CROSS-SECTION OF $e^+e^- \rightarrow \mu^+\mu^-$ ANNIHILATION

University of Manchester MPhys Project

A CONTINUUM APPROACH TO SIMULATING ION TRACKS

Manchester MIRaCLE Research Group

OPTICS: TRANSMUTATION AND MEDICAL ISOTOPES

Dalton Cumbrian Facility Technical Assistant

RADIATION CHEMISTRY AUTOMATION

Dalton Cumbrian Facility Summer Studentship

Presented at the University of Manchester Physics Undergraduate Conference.

MODELS OF COMPACT STARS

University of Manchester Year Theory Computing Project

EDUCATION

MPhys Physics with Theoretical Physics | University of Manchester
Quantum Field Theory • Gravitation • Nuclear Physics • Particle Physics
Cosmology • Astrophysical Processes • Electrodynamics • Condensed Matter

5 A-Levels (5A*), 14 GCSEs (7A*, 4A, 1B, 2C)