

Constantinos Vrahas

RAL/Edinburgh PhD student

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Experience

Rutherford Appleton Laboratory, United Kingdom
PhD in Experimental Particle Physics

September 2021 – present

Completed the hardware component of my PhD at RAL, focusing on developing cooling systems for characterising silicon photo-multipliers (SiPMs) for use in Upgrade II of the LHCb's ring imaging Cherenkov radiator (RICH). Designed, manufactured and commissioned a Peltier-based cooling system for initial characterisation and led the subsequent development and commissioning of a cryogenic cooling system for characterisation of irradiated SiPMs. The results of this research made a significant contribution to the progress of the RICH upgrade program

CERN, Switzerland
PhD in Experimental Particle Physics

September 2021 – present

Spent a year at CERN as part of my STFC-funded LTA, underwent shift training acquiring expert knowledge of the LHCb and collaborated closely with key members of the collaboration. Participated in test beam activities, with numerous contributions in commissioning the early readout electronics chain for the RICH upgrade program

University of Edinburgh, United Kingdom
PhD in Experimental Particle Physics

September 2021 – present

Attended various courses in the field of Particle Physics and professional development and subsequently begun work on measuring the B^+ lifetime using the latest data from LHCb. Recently presented the preliminary results of this analysis in a collaboration-wide meeting at CERN

University of Edinburgh, United Kingdom
MPhys project "Matter-antimatter asymmetry in charm decays $D^0 \rightarrow K3\pi$ "

September 2020 – August 2021

Completed my MPhys dissertation as part of the LHCb group in CERN. I was tasked with characterising the extent of secondary contamination in different signal regions, thus allowing us to identify a high-purity sample we could use to measure matter-antimatter asymmetry in D^0 decays

University of Edinburgh, United Kingdom
Internship on the observation of quantum entanglement

June 2019 – July 2019

Participated in a 6-week internship at the University of Edinburgh on the laboratory observation of quantum entanglement. This project is typically undertaken as a Senior Honours project and I was tasked with investigating and optimising it in order to achieve better measurements

University of Cyprus, Cyprus
Internship on magnetic materials

June 2018 – July 2018

Participated in a 5-week internship on magnetic materials, where I built a B-H loopers and measured the magnetic hysteresis of a permalloy sample

Cypriot National Guard, Cyprus
Cadet officer/Reserve Second Lieutenant

July 2014 – July 2016

Trained for 4 months in a military school (ΣΕΑΠ) in Crete to develop my leadership skills as an officer. Trained for 6 weeks in Cyprus to become a mortar specialist, helped in training the new recruits and was also responsible for training junior cadet officers in mortars. I was awarded the rank of Second Lieutenant for my services in July 2016

Education

PhD in Experimental Particle Physics
STFC RAL/University of Edinburgh, Harwell/Edinburgh

September 2021 – present

- Courses taken: **Detector Physics, Collider Physics, Flavour Physics, C++ programming, ROOT**
- Courses taught: **Data Acquisition and Handling, Nuclear Physics, Quantum Mechanics**
- Additional training: **STFC High Energy Physics Summer School, RAL graduate lectures, Beginner's FPGA programming course**

Theoretical Physics with integrated Master's (MPhys)
University of Edinburgh, Edinburgh

September 2016 – August 2021

- First year average grade: **82/100 (A2)**
- Second year average grade: **91/100 (A1)**
- Third year average grade: **80/100 (A2)**
- Fourth year average grade: **76/100 (A3)**
- Fifth year average grade: **66/100 (B)** – significant COVID-19 impact

Early Life Accomplishments

Qualified to be a member of **Mensa International** since December 2011

Received one gold, one silver and five bronze medals in the **Cyprus Math Olympiad**

Received a distinction in the **Regional Math Competitions of Nicosia** in June 2009 and June 2010

Received a distinction in the **Pancyprian Math Competition** in April 2009

Represented my school in the **Mathematic Relay Competition** and received the Gold medal

Received one Gold and three bronze medals in the **European Kangaroo Maths Competition**

Received the **Certificate of Merit** for academic excellence at the University of Edinburgh twice

Received the Bronze, Silver and Gold standard for the **Duke of Edinburgh** award

Skills

- Exceptional ability to grasp complex concepts in physics and mathematics
- Competent in ROOT, Python, C++, VHDL and LaTeX
- Extensive knowledge in the operation and commissioning of various experimental setups
- Proficient in machining, soldering, use of CAD and other design tools
- Problem solving and critical thinking
- Decision-making and project leadership
- Ability to learn and adapt to new skills quickly

Languages

- **English** – Expert
- **Greek** – Native
- **French** – Beginner

References

Grade transcripts, award certificates and reference letters available on request.