Alie Craplet

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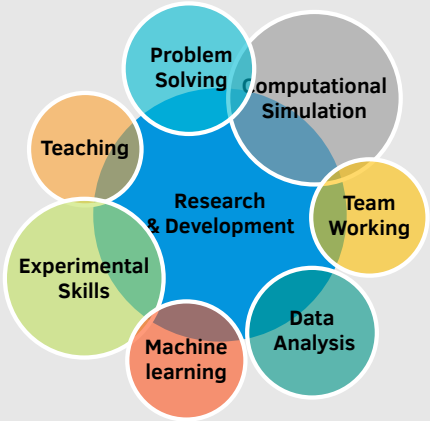
Acraplet

About me

Enthusiastic Experimental Physics student I am particularly interested in development of calibration and data analysis software. I would like to pursue a career in experimental Particle Physics. I enjoy reading and playing the guitar.

Skills

Overview



Programming and Languages

Python

Bash • Latex

French • English

German

Education

2017 - 2021 **Physics MSci.** (1^{st} class degree expected) **Imperial College London**

2014 - 2017 **French Baccalaureate** (Average 19.63/20) **Lycée Français C. de Gaulle**

Work Experience

June 2020 - Oct 2020 **Calibration of Water Cherenkov Neutrino detectors** **ICL - WCTE/IWCD**

- Writing a code performing the calibration of photomultiplier tubes (PMTs) for any Water Cherenkov detector geometry using an external light source.
- Proving, from GEANT4-simulated datasets, that the PMTs can be accurately calibrated to within 9.6ps using this novel method.
- Present my results to the international WCTE collaboration meeting.

Jan 2020 - May 2020 **Creating a laser eavesdropping device** **Imperial College London**

- Designing a system for measuring glass vibrations using an innovative interferometric approach in the scope of sound reconstruction.
- Writing the simulation and analysis software that allowed a reconstruction of pure frequency sounds with an error below 5%.

July 2019 - Sept 2019 **Research on Higgs boson CP-properties** **Imperial College London - CMS**

- Analysing the CMS data related to Higgs boson decay to tau leptons in the scope of determining the CP-properties of the Higgs boson.
- Using machine learning techniques (Keras, Tensorflow) to quantify the relevance of various detector measurements in the trajectory reconstruction using Monte-Carlo datasets in the $\pi^0 \to \gamma\gamma$ channel.

Mar 2019 - Aug 2019 **Upgrade of a Fourier-Transform Spectrograph** **Imperial College London**

- Coding a Python software correcting for the hardware fault in a high precision linear stage, thus reducing the error in a Fourier-Transform Spectrograph from 16nm to 0.1nm.
- Building a technical case against the hardware company leading to an ongoing refund procedure.

Mar 2018 - June 2018 **Experimental project - Building a Goniometer** **Imperial College London**

- Designing a prototype for an instrument performing smooth deposition of liquids on different solid supports for the investigation of surface tension and hysteresis phenomenon.
- Assembling and coding an Arduino -based controlling system allowing precise vertical motion of a syringe dispensing controlled volume of liquid at a chosen rate.

Teaching and Outreach

Mar 2016 - Present **Part-time tutor** **Families/Osborne Cawkwell Tuition**

- Developing bespoke lessons for my students aged 10 to 17 - including students with special needs- teaching them both Mathematics, Physics and some Humanities.

Sept 2018- Present **Secondary and High schools outreach** **CFBL/Lycée Français C. de Gaulle**

- Conduct a Science Week group activity presenting black holes and relativity in a pedagogical and fun way.
- Write an interactive course on Python basics, later used by High School teachers within their own lessons.