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I am a physics PhD student working at the Institut Laue Langevin in Grenoble. I am interested in new research related challenges to improve my skills in computational and experimental work and problem solving, as well as to increase my knowledge in cutting-edge physics problems by working in a real research environment.

Research Experience

2019-Present: PhD project in experimental condensed matter physics on the determination of the nuclear and magnetic structure in spin ice and disorder-induced quantum spin liquids. These systems are being studied with diffuse neutron scattering using instruments such as D7 from the ILL in France, MARI and SXD from ISIS in the UK and SEQUOIA from SNS in the USA.

2018: 6-month master project in low temperature physics at CERN, supervised by Dr William P Retz. The project consisted of studying loss of vacuum accidents on the high current transmission line called the Superconducting Link built for the High Luminosity LHC upgrade using the hydrodynamic solver called FLOWER developed at CERN by Dr Luca Bottura.

Summer 2017: 10-week internship founded by the Institute of Mathematica Innovation (IMI), supervised by mathematician Dr James Hook and physicist Dr Phillipe Blonde on machine learning and the classification of acoustic deep sea events.

2016/17: Development of a spectrometer app at the PhURST (Physics Undergraduate Research Student Training) program, organized by the university of Bath and supervised by Prof William Wadsworth.

2014: CERN beam line competition.

Education

2019-Present: PhD student at Royal Holloway University of London and the Institut Laue Langevin (ILL) in Grenoble, supervised by Prof Jon P Goff and Dr Lucile Mangin-Thro.

2015-2019: Master's degree in Physics (MPhys) at the University of Bath. Classification: First (81.38%)

2013-2015: Spanish science baccalaureate at SEK (San Estanislao de Kostka) international school with a final grade of 95.8%.

Technical Skills

- Programming languages: VBA, python, c, c++, MatLab, Maple and Fortran.
- Software: FullProf, GSAS-II, JMOL, Inkscape, Mantid, DAVE, GudrunN, SXD-2001, FLOWER, GIMP, LaTeX and Office Suite
- Proficient in the use of lab electronic equipment and construction of simple electronic circuits on protoboards.
- Knowledge in the use of time of flight and triple axis spectrometry neutron instruments with and without polarization from large scale research facilities such as ILL, ISIS and SNS.

Languages

- English and Spanish: Mother tongue.
- German: Fit in Deutsch 1, German official certificate.
- French: Basic knowledge.

Training Courses and Workshops

April 2021: 1-day training course on the use of Inkscape for graphic design.

February-April 2021: 5-week HERCULES course on neutron and synchrotron instrumentation and applications, as well as on computational tools for data analysis. It included remote experiments at the ILL, ESRF and PSI.

January 2021: Organized with two other PhD students an "Introduction to python" course for new PhD students at the ILL.

February 2020: 10-day ISIS Neutron Training Course on time of flight techniques at the ISIS facility in Oxford, UK. Instruments such as GEM, INES and ALF were used.

January 2020: 2-day course on Machine learning and AI organized by GRADnet.

November 2019: 1-day course on low temperature techniques organized by the IOP Low Temperature Group.

2013/14: On-line astrophysics courses from the Australian National University on "Great unsolved Mysteries of the Universe" and "Exoplanets" taught by Prof Brian Paul Schmidt.

Conferences

October 2021: Attended the ISIS student meeting 2-day conference.

September 2021: Presentation in the Journées de la Diffusion Neutronique conference, organized by the French Neutron Scattering Association.

July 2021: Attended the Polarized Neutrons for Condensed Matter Investigations (PNCMI) conference and the Theoretical & Experimental Magnetism Meeting (TEMM).

May 2021: Gave a seminar on magnetic diffuse scattering and polarization analysis at the ILL PhD seminar series.

April 2021: Attended the UK Neutron & Muon Science and User Online Meeting and Student Meeting 2021.

February 2021: Awarded a prize for best poster at the HERCULES course poster presentation.

February 2020: Poster presentation for the ISIS Neutron Training Course.

Publications

2018: Uploaded to CERN's EDMS two reports on modelling loss of vacuum accident on the Superconducting-Link that is being built for the High Luminosity LHC upgrade.

2017: Submitted to the IMI a report on semi-supervised and unsupervised algorithms for machine learning on the classification of spectrograms of acoustic events measured at deep-sea observatories

Additional Work Experience

2020: Lab demonstrator at Royal Holloway University of London, assisting 2nd year physics students.

2019/20: Academic representative of the 1st year condensed matter physics PhD students at Royal Holloway University of London.

2016 to 2019: Tour guides at the University of Bath on the university open days.

2016 to 2018: Peer mentor of 10 first year physics students.

Interests

Music and instruments: Attended classes in music theory, guitar and bass, and joined several bands.

Sports: Practiced judo for 10 years, completing a black belt first dan examination and assisted in the organization of tournaments.

References

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