

Job Hunting Points

1. You are selling yourself - explain why you are good for the buyer
2. Postdoc ads (usually) tell you what they want to buy - your skills are important for most searches
3. Faculty searches are usually looking for the “best” person - focus on physics as opposed to technical skills
4. Reference letters are probably most important for postdoc and faculty searches - but make sure anything you should brag about is in your CV
5. Keep it short - as long as it needs to be
 1. Keep cover letter short - do not repeat CV

Job Hunting Points

I wish to apply for the role of Postdoctoral Research Associate at Old Dominion University in experimental nuclear physics. I am currently a PhD student at the University of Glasgow. Throughout my PhD studies I have developed a broad range of skills as a researcher. As the focus of my PhD I have been directly involved in the development of the beam polarisation measurements and monitoring for the A2 collaboration. The degree of linear polarisation of the photon beam is the greatest source of error in experimental measurements at A2. As part of the linear polarisation team, I have led the implementation of a secondary target to be used downstream of the primary as a polarimeter in the detector hall, and developed a new analysis over a previously unstudied angular range to achieve an improved measurement of the degree of linear polarisation. I developed accurate Geant-4 simulations of the detector array required to extract $\cos-2\phi$ distributions from the secondary target for coherent and background channels of lead and carbon to extract the degree of linear polarisation and separately the beam polarisation for a range of primary targets. Working with collaborators at GlueX I am developing simulations of the production of linearly polarised photons for use at A2. These simulations will be used alongside my analysis to create real time measurements of the linear beam polarisation as data is collected. As part of the A2 collaboration I have assisted in numerous shifts on a range of experiments. I assisted in the installation and test measurements for the upgraded tagger, including the steering of the accelerator. Using the acquired data I adapted the current software to accommodate this change. I have presented my work, as well as the status of the beam polarisation measurements our group is responsible for at numerous collaboration meetings and yearly at summer schools and international conferences, the most recent of which will be the International Nuclear Physics Conference (INPC) this July.

I undertook my undergraduate studies at the University of York. In addition to studying a broad range of core modules I undertook many specialised modules focussing on Nuclear, Particle and Plasma physics. Across these modules I achieved strong scores and graduated with a 2:1 BSc degree (with honours). During my undergraduate studies I undertook two 8 week research placements with the Condensed Matter and Nuclear research groups. During my time with the condensed matter group I worked on the maintenance and implementation of the Low energy electron diffraction (LEED) system under vacuum to produce thin films of iron on copper grids with a silicon wafer. Hysteresis tests determined the magnetic capability of the film and guided investigations into the limits of its use. Working with the Nuclear group on data collected by the SAGE (Silicon and Germanium) spectrometer in Jyväskylä, after performing calibrations I determined the relevant efficiency curves to correctly calculate the intensity of the transitions determined and investigated the performance of the BGO shields, which as a result were replaced.

During my PhD I was awarded a prestigious Kick-Start post at the University of York by the UK Science and Technology Facilities Council (STFC). This post enables talented early career researchers to interrupt their PhD to further develop their public engagement skills. Building on my programming, data management and Geant4 skills I am developing digital resources including programming classes, scripts, detector simulations and physics games to encourage and inspire the next generation of researchers. This additionally involves version control working with DocR and Jupyter Notebooks. A selection of these resources are currently being used across the UK and South Africa and as part of the Binding Blocks collaboration.

In addition to my research I have also worked as a Teaching Assistant during my PhD. In this role I have been involved in a wide range of classes, however I have primarily been involved in teaching the third year nuclear and medical physics labs. Through this I have taught both labs and smaller lecture groups, running the entire medical physics lab when required. My teaching and marking resources have been integrated into the medical physics class to aid both student and TA.

Throughout my PhD I have developed a broad knowledge and interest in the ongoing Hadron Physics programme of the A2 collaboration. My research as part of my PhD has primarily been focused on hadron spectroscopy and linear beam polarisation. The ability to probe and test QCD across an energy range that is so vital to our understanding of the formation of the visible matter surrounding us is particularly appealing. This is an excellent time to be a researcher interested in this field due to the large investments going into facilities such as JLab, PANDA@FAIR and the upcoming Electron-Ion Collider.

My ultimate goal is to secure a permanent position in academia. I am excited by the prospect of working in the rapidly changing, dynamic and intellectually challenging nature of academia. I enjoy the prospect of a role where my responsibilities vary, ranging from teaching students to carrying out research. For the next stage in my career I am keen to further develop my research and teaching skills, building on those I have used and developed during my time at the University of Glasgow and am keen to progress to the point where I am training graduate students of my own. As such I feel the postdoctoral position at Old Dominion would be an ideal role as it incorporates a wide range of research roles alongside graduate supervision.

Job Hunting Points

Curriculum Vitae of [REDACTED]

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Job Hunting Points

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