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| Application from | Kenzie, Matthew |
| E-mail Address | matthew.william.kenzie@cern.ch |
| Job | Fellowship and GET Programmes / Programme des Boursiers et GET / AFC-2013-2/FELL |
| Application date | 28/08/2013 19:33 |

Personal Details

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| Title | Mr. |
| Family Name | Kenzie |
| First Name(s) | Matthew |
| Maiden Name (if applicable) | |
| Gender | Male / Homme |
| Date of birth | 21/01/1987 |
| Nationality | British (GB) |
| Second Nationality (if applicable) | |
| Country of Birth | UNITED KINGDOM |
| Town of Birth | London |
| Home Address | 167 Knights Hill |
| City | London |
| Country | UNITED KINGDOM |
| Postal Code | SE27 0PZ |
| Landline Phone Number (with international prefix) | |
| Mobile Phone Number (with international prefix) | +44 7971 264492 |
| What is your mother tongue? | English |
| Please rate your level of English | English is my mother tongue |
| Please rate your level of French | B1 |
| Please select any other languages you may speak | |

Education

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| Country | UNITED KINGDOM |
| Level of Education | UNITED KINGDOM - PhD |
| Title of Diploma/Qualification Note: Please give the full title in their original language (using Latin characters) and in English or French. | Doctor of Philosophy in High Energy Physics |
| Attended From | 10/2010 |
| Attended To (planned end date for current studies) | 04/2014 |
| School/University Name | Imperial College London |

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|---------------------------|-------------------------|
| Country | UNITED KINGDOM |
| Level of Education | UNITED KINGDOM - Master |

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| Title of Diploma/Qualification Note: Please give the full title in their original language (using Latin characters) and in English or French. | Master of Theoretical Physics Distinction See CV for details |
| Attended From | 10/2009 |
| Attended To (planned end date for current studies) | 09/2010 |
| School/University Name | Imperial College London |

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|--|---|
| Country | UNITED KINGDOM |
| Level of Education | UNITED KINGDOM - Bachelor |
| Title of Diploma/Qualification Note: Please give the full title in their original language (using Latin characters) and in English or French. | Bachelor of Physics with Honours 1st Class See CV for details |
| Attended From | 10/2006 |
| Attended To (planned end date for current studies) | 07/2009 |
| School/University Name | Durham University |

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|--|--|
| Country | UNITED KINGDOM |
| Level of Education | UNITED KINGDOM - A-levels |
| Title of Diploma/Qualification Note: Please give the full title in their original language (using Latin characters) and in English or French. | Maths - A Further Maths - A Physics - A Chemistry - A |
| Attended From | 09/1998 |
| Attended To (planned end date for current studies) | 07/2005 |
| School/University Name | The Perse School Cambridge |

Employment

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| Date from | 10/2010 |
| Date to | 04/2014 |
| Name of your Employer | Imperial College London |
| Country | UNITED KINGDOM |
| Title of your Position | PhD student |
| Job Description | I have worked as a PhD student for the CMS Collaboration Higgs group on the Higgs to two photons decay. I spent two years on placement at CERN. My main responsibilities are writing software and developing analysis techniques for the group, producing publication quality results and interpreting the outcomes, writing documentation and doing shift work on CMS. I have taught some short postgraduate computing courses and am an undergraduate coursework assessor. |

Specific Information (Fellows)

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| When would you like to start working at CERN? | 04/2014 |
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| What is your motivation for applying for this job? | <p>In the work towards obtaining my PhD I spent two years working at CERN in the CMS Higgs group on the Higgs to two photons decay channel. Contributing to and being part of the discovery of the new boson was a wonderful experience. This position would allow me to continue this research in Higgs decays and its interface, if any, with physics beyond the Standard Model and get involved with the ongoing efforts to find direct evidence of new physics at the LHC.</p> <p>The great advantage of being at CERN is the amount of resources available to young researchers. Most importantly, I think, the benefit comes in the form of personal contact, discussion and collaboration with other driven and intelligent individuals with a vast collective knowledge and experience. Secondly, the proximity to experiments, computing and depth of the physics program are second to none. There are a huge number of wide ranging seminars and a vastness of topics for discussion, learning and research which is unobtainable at many other institutes.</p> |
| Have you ever worked at CERN before? | Yes - as a Doctoral Student |
| If you selected "Yes - as a Fellow", please indicate for how long have you been a Fellow (in months)? | |
| Do you wish to also be considered for a COFUND Fellowship? | Yes |
| Please indicate for which type of Fellowship you wish to be considered | Research (Experimental physics) |
| Main field of study | |
| Secondary field of study | |
| Tertiary field of study | |
| Applied physics | |
| Describe the projects where you used the selected applied physics topics and/or any others that are not listed | |
| Architecture | |
| Describe the projects where you used the selected architecture topics and/or any others that are not listed | |
| Surveying | |
| Describe the projects where you used the selected surveying topics and/or any others that are not listed | |
| Chemistry | |
| Describe the projects where you used the selected chemistry topics and/or any others that are not listed | |
| Civil engineering | |
| Describe the projects where you used the selected civil engineering topics and/or any others that are not listed | |
| Programming Languages | |
| Describe the projects where you used the selected programming languages and/or any others that are not listed | |
| Databases | |
| Describe the projects where you used the selected databases and/or any others that are not listed | |
| Information Technologies | |
| Describe the projects where you used the selected information technologies and/or any others that are not listed | |
| Theory of electrical engineering | |

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| Describe the projects where you used the selected theory of electrical engineering topics and/or any others that are not listed | |
| Networks and systems | |
| Describe the projects where you used the selected networks and systems and/or any others that are not listed | |
| Low and high frequency engineering | |
| Describe the projects where you used the selected low and high frequency engineering topics and/or any others that are not listed | |
| Experimental Physics | |
| Describe the projects where you used the selected experimental physics topics and/or any others that are not listed | |
| Materials and experimental techniques | |
| Describe the projects where you used the selected materials and experimental techniques and/or any others that are not listed | |
| Mathematics | |
| Describe the projects where you used the selected mathematics knowledge and/or any others that are not listed | |
| Mechanical engineering | |
| Describe the projects where you used the selected mechanical engineering topics and/or any others that are not listed | |
| Safety | |
| Describe the projects where you used the selected safety topics and/or any others that are not listed | |
| List of (up to 5) most important publications in refereed scientific journals: reference, title. In each case summarize in 2 lines maximum your personal contribution. | <p>CMS Collaboration, "Observation of a new boson with a mass near 125 GeV in pp collisions at $\sqrt{s} = 7$ and 8 TeV", JHEP 06 (2013) 081, doi:10.1007/JHEP06(2013)081</p> <p>- Produced results and statistical interpretation for two photon channel. Developed independent analysis to cross check background and categorisation.</p> <p>CMS Collaboration, "Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC", Phys. Lett. B 716 (2012) 30, doi:10.1016/j.physletb.2012.08.021</p> <p>- Produced many of final results and plots for two photon channel. Developed independent analysis to cross check background and categorisation.</p> <p>CMS Collaboration, "Search for the standard model Higgs boson decaying into two photons in pp collisions at $\sqrt{s} = 7$ TeV"</p> <p>- Contributed towards result production.</p> |
| Are you a PhD holder or PhD student? | Yes / Oui |

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| Specify submission date, defence date, title of thesis and name of your supervisor; summarize your thesis in maximum 5 lines; give the most significant results obtained. | <p>Title: Properties of the observed Higgs-like resonance around 125 GeV in its decay to two photons at the CMS experiment at the LHC. Supervisor: Prof. Paul Dauncey Submission date: March 2014 Defence date: March - April 2014</p> <p>I present results of the Higgs decay to two photons at CMS including three different analysis regimes, namely one for the main results and coupling measurements , one for the spin analysis and one which cross checks the background model. The main results are the best-fit quantities of the new boson (mass, signal strength, SM couplings) as well as exclusion limits on its spin and other properties.</p> |
| List up to 3 experiments that you have participated in. In each case summarize in 2 lines your main contribution (other than your PhD) | |
| Optionally: List of up to 5 public or internal notes to which you have contributed personally. Indicate the number of authors. | <p>CMS-AN-13-162, and CMS-13-230, "Handling background shape function uncertainty as a nuisance parameter, with reference to Higgs to two photons" Main author (4 authors total)</p> <p>CMS-PAS-HIG-13-016, "Properties of the observed Higgs-like resonance decaying into two photons" Main author and editor (2 authors total)</p> <p>CMS-AN-13-008, "Updated measurements of the Higgs boson at 125 GeV in the two photon decay channel" Contributing author (67 authors total)</p> <p>CMS-AN-12-032, "Use of a non-parametric background model within a multivariate analysis to search for a Higgs boson decaying into two photons in the CMS detector" Main author (9 authors total)</p> <p>CMS AN-11-343, "Residual photon energy corrections and resolution from simulation" Main author (3 authors total)</p> |
| List of (up to 5) presentations at international Conferences (specify talk or poster) or workshops: conference name, date, title of the talk | <p>Higgs Hunting, Orsary 2013 - "Higgs to two photons at CMS" Invited conference plenary talk</p> <p>LHC Collider Cross Talk, CERN 2013 - "Higgs to two photons at CMS" Invited workshop chalk and talk</p> <p>CMS UK, Oxford 2013 - "Jackknifing the Higgs to gamma gamma analysis" Invited workshop talk</p> <p>CERN Summer School, Arequipa 2013 - "Higgs to two photons at CMS" Poster</p> <p>RAL High Energy Physics Summer School, Oxford 2013 - "Higgs to two photons at CMS" Poster</p> |
| Statement of Research Interest (max 15 lines) | Please see attached CV. |
| Y | |