Job Related Information

This document includes information about the role for which you are applying and the information you will need to provide with your application.

1. Role Details

<table>
<thead>
<tr>
<th>Vacancy reference</th>
<th>13668</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job title:</td>
<td>SMILE Calibration Scientist</td>
</tr>
<tr>
<td>Reports to:</td>
<td>Lecturer in Physical Sciences</td>
</tr>
<tr>
<td>Salary:</td>
<td>£32,004 to £38,183</td>
</tr>
<tr>
<td>Terms and conditions:</td>
<td>Research Staff</td>
</tr>
<tr>
<td>Grade</td>
<td>AC2</td>
</tr>
<tr>
<td>Duration of post:</td>
<td>Temporary until 31 March 2019</td>
</tr>
<tr>
<td>Working hours:</td>
<td>Full Time</td>
</tr>
<tr>
<td>Location:</td>
<td>Milton Keynes</td>
</tr>
<tr>
<td>Closing date:</td>
<td>Noon, 31 August 2017</td>
</tr>
<tr>
<td>Type of application form accepted:</td>
<td>Short</td>
</tr>
<tr>
<td>Number of referees required:</td>
<td>Three</td>
</tr>
<tr>
<td>Unit recruitment contact:</td>
<td>Fiona McGavin</td>
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</table>
2. Summary of duties

The Centre for Electronic Imaging (CEI) is a research centre within the School of Physical Sciences at the Open University. The CEI is a collaboration between the Open University and Teledyne e2v, a world-leading manufacturer of scientific and industrial image sensors. The CEI is dedicated to conducting research into advanced imaging technologies for science applications and provides knowledge exchange between UK industry and academia.

The CEI conducts its research in collaboration with many universities, agencies and companies including the UK Space Agency, European Space Agency, NASA and Teledyne e2v. One such mission is the joint European Space Agency (ESA) – Chinese Academy of Sciences (CAS) Solar Magnetospheric Ionospheric Link Explorer (SMILE), which when launched will to study the interaction between the Earth’s magnetosphere-ionosphere system and the solar wind on a global scale. The CEI is part of the SMILE Soft X-ray Imager (SXI) consortium and is responsible for the testing, modelling and verification of the performance of the CCD used in the SMILE SXI instrument.

This post at the CEI is to join the CEI SMILE project team as a SMILE Calibration Scientist. The role holder will be engaged in all aspects of the development, planning and execution of X-ray test and measurement campaigns to perform detailed X-ray calibration SMILE CCD. Working with the CEI SMILE project team this will involve the development, test and verification of an X-ray calibration test camera system and the associated data capture and data analysis software algorithms. The role holder will also be responsible for developing models, algorithms and test data that will help verify that the SXI CCDs meet the performance required of the instrument against its science goals and will develop algorithms to be implemented within the SMILE SXI data processing pipeline.

The role holder will also attend regular project meetings and conferences, deliver progress reports and interface with team members and external scientists and engineers from the University of Leicester, Mullard Space Science Laboratory (MSSL) and ESA.

Ultimately, role holder is expected to become a key expert in the development, operation and performance of the SMILE CCD devices.

**Main Duties**
The successful candidate will be expected to:
1. Develop, set-up and commission the SMILE CCD X-ray calibration test camera system;
2. Develop, plan and execute X-ray test and verification campaigns for SMILE CCD calibration and performance validation studies;
3. Analyse the results of the SMILE CCD X-ray test and verification campaigns and provide insights to those results based on the project requirements;
4. Develop CCD Response Matrix Function (RMF) and associated data products for implementation into the SMILE SXI data processing pipeline;
5. Work as an integral part of the CEI SMILE Project Team to analyse the results of SMILE CCD radiation damage studies and develop radiation correction algorithms for the SMILE SXI data processing pipeline;
6. Professionally document role activities and contribute to the CEI SMILE project documentation and data deliverables to the SMILE SXI Consortium and SMILE CCD Working Group;
7. Work closely with the CEI SMILE Project Team to ensure the progress of work adheres to any programmatic timescales. Report problems and non-compliances to the Project Team;
8. Attend regular Project meetings, workshops and conferences. Report progress verbally and in written form.
9. Contribute additional material and inputs as required for publications by the academic team.
10. Support external collaborators (e.g. UL, MSSL, ESA) as directed by the Project Lead
11. Promote knowledge and technology exchange with Teledyne e2v and other project collaborators.

**Other Duties**
All Faculty staff are expected to:
- Co-operate with the University in ensuring as far as is necessary, Statutory Requirements, Codes of Practice, University and Faculty polices are complied with;
- Have a strong commitment to the principles and practice of equality and diversity;
- Attend appropriate staff development events.

3. Person specification

**Requirements**  (E = Essential/ D = Desirable)

<table>
<thead>
<tr>
<th><strong>Education, qualifications and training</strong></th>
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<tr>
<td>- A PhD in Physics, Engineering or a closely related subject;</td>
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<tr>
<th><strong>Knowledge, work and other relevant experience</strong></th>
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<tr>
<td><strong>Essential:</strong></td>
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<tr>
<td>- Good understanding and experience in the characterisation of image sensors, proficiency with data acquisition systems and data processing software;</td>
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<tr>
<td>- Good understanding and experience in writing bespoke data acquisition and data analysis software algorithms with a focus on interfacing with test systems and automation of test measurements;</td>
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<tr>
<td>- Demonstrable proficiency in software algorithm development in MATLAB™, C/C++, Java and/or Python (or similar) development environments</td>
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<td>- Good problem solving and analytical skills, demonstrated logical and rigorous approach to work;</td>
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| **Desirable:** |
| - Experience with CCD and/or CMOS imaging sensors; operation, test and calibration; |
| - Experience with X-ray and optical testing of imaging sensors; |
| - Knowledge or some experience in Astronomy/Space Science or applications of high performance imaging sensors; |
| - Electronics experience in fields related to CCD and CMOS imagers, including analogue and digital practice, plus data acquisition; |
| - Experience in the formation of simulation software to model physical effects and form predictive models to extrapolate performance; |
| - Experience in supervising research students. |

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<tr>
<th><strong>Personal abilities and qualities</strong></th>
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<td><strong>Essential:</strong></td>
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<td>- Demonstrated ability to work both as part of a team and on own initiative;</td>
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<td>- Well-developed self-management skills with the ability to prioritise work appropriately, deal with several competing demands, manage own time effectively and deliver results to an agreed schedule;</td>
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<td>- Excellent verbal and written communication in a team environment and good presentation skills. Ability to communicate effectively with colleagues from a wide range of backgrounds;</td>
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<td>- Excellent work ethics.</td>
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| **Desirable:** |

4. Role specific requirements e.g. Shift working
5. About the unit/department

**Faculty of Science, Technology, Engineering & Mathematics**

The newly formed Faculty of Science, Technology, Engineering and Mathematics (STEM) comprises:

- School of Computing & Communications
- School of Environment, Earth & Ecosystem Sciences
- School of Engineering & Innovation
- School of Life, Health & Chemical Sciences
- School of Mathematics & Statistics
- School of Physical Sciences
- Knowledge Media Institute
- Deanery including teams supporting Curriculum, Research and Enterprise, Laboratory Infrastructure and Faculty Administration

“We aspire to be world leaders in inclusive, innovative and high impact STEM teaching and research, equipping learners, employers and society with the capabilities to meet tomorrow’s challenges”

The Faculty of STEM consists of 700 staff and 1,800 Associate Lecturers. The Faculty delivers over 185 modules across undergraduate and postgraduate curriculum, supporting more than 20,000 students (full time equivalents) which is 29% of the OU total.

The Faculty generates more research income (circa £20M) than any other Faculty in the University, supported by a comprehensive laboratory infrastructure.

We are proud of our distinctive values and capabilities underpinning our aspiration:

**We are inclusive:**
- We transform people’s lives, ensuring STEM education is openly accessible to many thousands of students from diverse backgrounds – our students express high satisfaction with their study experience
- We engage the public in exciting citizen science and engineering, including through free open educational resources, multi-platform broadcasting, outreach to inspire the next generation and with programmes to encourage more women into STEM

**We are highly innovative:**
- We are at the forefront of innovative developments in teaching practical science and engineering at a distance, through simulated and remote access laboratories and practical experimentation
- Our high quality teaching and curriculum are informed by world-leading research, strong links with professional bodies and communities of practitioners, as well as by scholarship focused on continuously improving our STEM pedagogy

**We deliver significant social and economic impact:**
- We provide STEM higher education at a scale and reach unsurpassed in the UK, with a sizeable international reach and further growth potential
- We inject transferable STEM skills and knowledge direct into the workplace for immediate employee and employer benefit, as students combine study while working
- The employability value of our courses is underpinned by accreditation from leading STEM Professional Bodies and Learned Societies, as well as partnerships and sponsorship with leading employers
• Our high quality, applied and academically relevant teaching and research addresses real-world issues, delivering impact for industry and society, including addressing pressing STEM skill-shortages across the UK

School of Physical Sciences

The School of Physical Sciences is a lively and innovative community of approximately 80 academic and research staff and 70 PhD students, mostly based in Milton Keynes. Our curriculum is supported by associate lecturer staff based all over the UK and Ireland; physics, astronomy and planetary sciences undergraduate modules are currently being studied by hundreds of students all over the world and we also contribute to an introductory and interdisciplinary science modules being studied by several thousand students.

Our research covers a wide range of subjects, broadly aligned with the research disciplines of

• Astronomy
• Physics
• Planetary and Space Sciences
• Space Instrumentation
• Physics Education

We have an unparalleled suite of analytical instrumentation in our modern laboratories on campus; this is complemented by our regular use of multi-national facilities such as the Diamond synchrotron and ESO’s telescopes. We have contributed to well-known space missions such as the Rosetta Mission, and have developed some of our spaceflight instrumentation for medical and environmental applications.

School members also contribute to the Open University’s teaching on a large range of modules and we have been at the forefront of many innovations in distance education, including the OpenScience Lab. We are members of SEPnet, the South East Physics Network. Our commitment to equality and diversity has been recognised by the award of “Juno Champion” status by the Institute of Physics and an Athena SWAN Silver Award.

We currently offer undergraduate qualifications in Mathematics and Physics and Natural Sciences (with a physics pathway and an astronomy and planetary science pathway), with a strand which carries Institute of Physics accreditation. We are in the process of refreshing the curriculum, both at entry level to reflect the diverse range of entry qualifications of our students, and at Stage 3. In the near future we are likely to offer a BSc (Hons) Physics and/or a BSc (Hons) Astronomy and Planetary Science and/or an integrated MPhys, including physics, astronomy, planetary and Space science. A new MSc in Space Science and Technology is currently recruiting students and will run for the first time from February 2017.

Priority Research Areas in the School of Physical Sciences

Astronomy

• The Compositional Universe: exploiting the spectroscopic discovery space from ALMA, JWST, SPICA, SOFIA and IRAM/NOEMA, E-ELT, VLT, SKA, JCMT, SALT, LOFAR, ELIPS, Herschel, SDSS-IV, Euclid strong lensing, etc., to study galactic star formation, evaporating exoplanets, and the physics of galaxies in the distant universe. We will further develop our laboratory/observational astrochemistry research to focus on the development of molecular compositional diagnostics.

• The Time-Domain Universe: exploiting the discovery space of new and future telescopes e.g. Gaia, LIGO, PLATO 2.0, TWINKLE, VLT and LSST, in studies such as galactic and extragalactic stellar populations using leading follow-up facilities such as SALT, or (as part of a wider follow-up network) our robotic telescopes, with a focus on key processes such as stellar binarity.

Physics

• Biomedical physics: to understand physical phenomena involved in conditions such as cancer and cardiovascular diseases and their treatment through experimental and theoretical investigations of a range of approaches such as electron-driven processes in radiation treatment and imaging, use of nanoparticles for cancer therapy and plasma sources for biomedical purposes.
- Quantum correlated systems: theoretical and experimental study of quantum correlations in atomic, molecular and condensed matter systems, and the development of practical applications such as quantum enhanced devices and the functionalisation of materials, as well as the development of multi-purpose software to treat electronic continua.
- Engineering physics: applied plasma research aimed at developing novel functional materials, understanding electron induced processes in nanofabrication and the development of plasma-driven techniques for advanced materials applications.

**Planetary and Space Science**
- Application of advanced analytical techniques, laboratory simulation, remote observation and modelling to investigate the key processes involved in the formation and evolution of the Solar System and the planetary bodies it contains, including the search for habitable environments and the presence of life.
- Maintain and build high scientific credibility for our analytical expertise by exploiting the performance of existing instruments and updating the analytical infrastructure in order to ensure leading involvement in upcoming sample-return missions, and maintain access to the most important planetary samples. Particular strengths are in the measurement of light-stable isotopes using conventional mass spectrometry and *in-situ* analysis of samples.
- Development and expansion of our expertise in planetary environments using modelling, remote sensing and the use of field analogues and simulation facilities on Earth, and secure further leading science team involvements in future planetary space missions.

**Space Instrumentation**
- Development of imaging sensors and instruments for space applications, with expertise in a range of wavelengths from IR to X-ray and the study of the effects of radiation damage, in order to secure involvement in future space missions.
- Development of miniaturized analytical instrument systems for planetary exploration missions, particularly for the measurement of volatiles, organic materials and their light stable isotope composition, and securing leading involvement in future planetary exploration missions.
- Knowledge exchange between the UK technology industry and academia, utilising the technologies and expertise in detectors and mass spectrometer systems to provide commercial products and solutions.

**Physics Education Research**
- Remote and virtual experimentation
- Concept inventories
- Interactive online assessment
- Demographic differences in achievement

6. **How to obtain more information about the role or application process**

If you would like to discuss the particulars of this role before making an application please contact David Hall on 01908 659579 or email: david.hall@open.ac.uk.

If you have any questions regarding the application process please contact Fiona McGavin on 01908 658110 or email: STEM-Recruitment@open.ac.uk
7. The application process and where to send completed applications

<table>
<thead>
<tr>
<th>Your application should contain:</th>
<th>Your application should contain:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Completed short application form;</td>
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<tr>
<td></td>
<td>• CV</td>
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<td></td>
<td>• Covering letter detailing how you meet the person specification.</td>
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</tbody>
</table>

Please ensure that your application reaches the University by: Noon on 31 August 2017

E-mail your application to: STEM-Recruitment@open.ac.uk

Or post it to Name/Job title: Fiona McGavin, Staffing Adviser

Department/Unit: Deanery, Faculty of Science, Technology, Engineering & Mathematics

Address: The Open University, Walton Hall, Milton Keynes, MK7 6AA

8. Selection process and date of interview

<table>
<thead>
<tr>
<th>The interview panel will be chaired by:</th>
<th>Prof Andrew Holland, Professor of Electro-Optics</th>
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</thead>
<tbody>
<tr>
<td>The other members of the interview panel will be:</td>
<td>Dr David Hall, Lecturer in Physical Sciences</td>
</tr>
<tr>
<td></td>
<td>Dr Matthew Soman, Space Instrumentation Research Fellow</td>
</tr>
<tr>
<td></td>
<td>A member of the Faculty of STEM, to be confirmed.</td>
</tr>
<tr>
<td>The interviews will take place on:</td>
<td>To be confirmed</td>
</tr>
<tr>
<td>The selection process for this post will include</td>
<td>To be confirmed.</td>
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</tbody>
</table>

We will let you know as soon as possible after the closing date whether you have been shortlisted for interview. Further details on the selection process will also be sent to shortlisted candidates.

Applications received after the closing date will not be accepted.