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

Vacancy reference	14613
Job title:	Post Doctoral Research Associate
Reports to:	Senior Lecturer
Salary:	£29,799 - £38,833
Terms and conditions:	Research
Grade	AC1/2 (appointment depending on qualification & experience)
Duration of post:	36 months starting 1 August 2018
Working hours:	Full Time
Location:	Milton Keynes
Closing date:	Noon on 16 May 2018
Type of application form accepted:	Short
Number of referees required:	Three
Unit recruitment contact:	Fiona McGavin

2. Summary of duties

This post is funded by the UK Space Agency and the Open University, to work on two current Mars missions. The role holder will contribute to the Faculty's research objectives by having responsibility for the exploitation of data from the NOMAD instrument, part of the ExoMars Trace Gas Orbiter mission to Mars. This work will link to the NASA InSight mission, in collaboration with the University of Oxford.

The Open University is co-leading the NOMAD instrument, which is a spectrometer instrument designed to map trace gases and aerosols in the martian atmosphere. The NOMAD instrument is now successfully acquiring science data in orbit around Mars, and the InSight lander is set to land on Mars later this year. This ambitious project seeks to link trace gas detections in the atmosphere (from TGO observations) with potential seismic signatures within Mars (from InSight data). The role will involve the application of high-resolution climate model studies with spacecraft observations of the martian atmosphere made using remote sensing instruments. The role will be part of a collaboration with the University of Oxford who are co-leading one of the InSight seismic instruments. The role holder will become part of the international NOMAD team, and have the opportunity to interact with the staff at the European Space Agency and NASA.

This project offers:

- The chance to work as part of an exciting international spaceflight team on the latest missions to Mars
- A chance to use state of the art Mars atmospheric models
- An opportunity to develop skills relating to modelling complex systems
- An opportunity to develop a good portfolio of published research in Mars science
- Experience in handling spacecraft data

Main Duties

1. To design and perform martian climate modelling experiments
2. To design and perform martian atmospheric data assimilation experiments
3. To assist the project team in developing and testing new code for fast access of large data sets
4. To assist the project team in interpreting and archiving model output
5. To write papers on the research and publish them in peer-reviewed journals, and to present findings at international conferences and workshops
6. To carry out administrative tasks associated with the work, such as writing project reports and documenting experiments and code updates

All staff are expected to:

- Co-operate with the Open University in ensuring as far as is necessary, that Statutory Requirements, Codes of Practice, University Policies and School Health and Safety arrangements are complied with.
- Have a strong commitment to the principles and practice of equality and diversity.
- Attend appropriate staff development events

2. Person specification

Requirements (E = Essential/ D = Desirable)
Education, qualifications and training
• A PhD in planetary science, atmospheric physics, or a closely related field
Knowledge, work and other relevant experience

Essential:	• Knowledge and experience of atmospheric science • Experience in running atmospheric or climate models • Demonstrate a broad understanding of the key physical processes/science questions that ExoMars TGO is investigating • Ability to communicate research results effectively as demonstrated by a record of peer-reviewed paper publication and submission and conference talks and posters
Desirable:	• Experience in Fortran and Python programming • Experience in running Mars climate models and knowledge of martian climate processes • Experience in research involving data assimilation • Experience in testing and validating atmospheric models against spacecraft observations • Experience in processing and exploiting data from spacecraft observations
Personal abilities and qualities	
Essential:	• Good oral and written communication skills • Good reporting and data presentation skills • Can demonstrate being a good team worker and able to work under own initiative.
Desirable:	• Good negotiating and influencing skills

3. Role specific requirements e.g. Shift working

The applicant must be able to travel to occasional project meetings in the UK and Europe/US/Russia as required.

5. About the unit/department

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 £17M) than any other Faculty, 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 85 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 whilst each year our physics, astronomy and planetary sciences and interdisciplinary science modules are studied by thousands of students all over the world.

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 extensive suite of world class facilities and laboratories, including advanced analytical instrumentation, experimental and simulation chambers and instrument development laboratories, complemented by regular use of large-scale facilities such as synchrotrons (e.g. Diamond) and a wide array of ground based and space-based telescopes (e.g. VLT, Hubble) as well as our own robotic telescopes in Tenerife. We play a major role in many well-known space missions such as Rosetta and ExoMars. We also apply much of our spaceflight and laboratory expertise to a wide array of real world problems including 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 and the OpenScience Observatories. 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 Natural Sciences (with a physics route and an astronomy and planetary science route), with a strand which carries Institute of Physics accreditation, and in Mathematics and Physics. We also offer an MSc in Space Science and Technology. We are in the process of refreshing the curriculum at Stage 3, and are drawing up plans for adding an integrated MPhys to our portfolio, including topics in physics, astronomy, planetary and space science.

Priority Research Areas in the School of Physical Sciences

Astronomy

- The Compositional Universe: exploiting the spectroscopic discovery space from major facilities and projects including ALMA, JWST, SPICA, SOFIA and IRAM/NOEMA, E-ELT, VLT, SKA, JCMT, SALT, LOFAR, ELIPS, Herschel, SDSS-IV, Euclid 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 Dr Manish Patel on +44 (0)1908 659598 or email: manish.patel@open.ac.uk.
If you have any questions regarding the application process please contact Fiona McGavin on +44 (0)1908 858110 or email: STEM-Recruitment@open.ac.uk.

7. The application process and where to send completed applications

Your application should contain:	• Short application form • CV • Covering letter detailing how you meet the person specification
Please ensure that your application reaches the University by:	Noon on 16 May 2018
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

The interview panel will be chaired by:	Dr Manish Patel
The other members of the interview panel will include:	Dr Stephen Lewis, plus others TBC
The interviews will take place on:	31 May 2018
The selection process for this post will include	TBC

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.