

Job title	Herchel Smith Postdoctoral Research Fellowships (Extreme Universe)
Grade	Grade 7
Salary range	£33,309-£40,927
Staff Group	Research
Department / Institution	Institute of Astronomy or Department of Physics or Department of Applied Mathematics and Theoretical Physics within the School of Physical Sciences

Role-specific information

Role Summary

The purpose of the role is to support and maintain the University's national and international reputation for excellence in teaching and research. Working in the core research area of the '[Extreme Universe](#)', contribution to excellence in research will provide substantial scope for academic judgement, originality, interpretation and presentation of results. The role holder will assist with grant administration and the writing of reports for funding bodies. Contribution to teaching may include participation in the research group's teaching programme and the supervision of students. The role holder will participate in the overall contribution of the department/faculty as appropriate.

Independent research the Extreme Universe within the broad fields of either astronomy, physics, applied mathematics or theoretical physics

Key Responsibilities

Research and scholarship:	75%
<ul style="list-style-type: none"> develop research objectives and proposals for own or joint research; conduct individual and collaborative research projects; write up research work for presentation and publication; continually update knowledge and understanding in field; translate knowledge of advances in the subject areas into research activity; manage own research and administrative activities, with guidance if required; communicate material of a specialist or highly technical nature; 	
Teaching and learning support:	5%
<ul style="list-style-type: none"> may assist in the supervision of student projects; may provide limited supervision/instruction to classes; may assist in the development of student research skills; may plan and deliver seminars relating to research area; 	

Liaison and networking:	10%
<ul style="list-style-type: none"> • liaise with colleagues and students; • build internal and external contacts and participate in networks for the exchange of information and to form relationships for future collaboration. 	
Planning and organising:	10%
<ul style="list-style-type: none"> • plan the use of research resources, laboratories and workshops as appropriate; • plan and manage own research activity in collaboration with others; • contribute to planning of joint research projects led by principal investigator. 	

Person Profile

This section details the knowledge, skills and experience we require for the role.

Education & qualifications	Applicants must have received a PhD, or equivalent doctoral-level research degree. If an applicant has not yet formally received their degree, they must present evidence of having completed the academic requirements before commencing the Fellowship.
Specialist knowledge & skills	Specialist knowledge in one or more of the scientific fields described under 'Role Summary'. Computing skills are required and the ability to produce scientific articles for publication in peer-reviewed journals.
Interpersonal & communication skills	<ul style="list-style-type: none"> • Organisational skills • Communication skills • Team-working skills
Relevant experience	<ul style="list-style-type: none"> • There is no age limit but Herchel Smith Fellowships are restricted to those at the start of their research careers and applicants must normally be within three years of receiving their PhD degree on the date on which they would take up tenure of their Fellowship at Cambridge. The length of your post-doctoral experience should be taken from the date of your PhD viva (or equivalent) until the date you take up this Fellowship. Exceptions to this time limit will be made in the case of applicants who have taken a career break (e.g. for maternity leave or compulsory national service). In these cases, brief details about the period of interruption must be provided with your application. • Experience of managing own workload and must possess a scientific publication record
Additional requirements	<ul style="list-style-type: none"> • To demonstrate ability to write reports, present results and contribute to academic papers • A high level of accuracy and attention to detail • Ability to work flexibly and travel if required

Terms and Conditions

Location	Institute of Astronomy or Department of Physics or Department of Applied Mathematics and Theoretical Physics
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Working pattern	Monday–Friday (with flexibility)
Hours of work	Your employment is full-time. There are no formal conditions relating to hours and times of work but you are expected to work such hours and days as are reasonably necessary for the proper performance of your duties. Your times of work should be agreed between you and your Head of Institution.
Length of appointment	Up to three years.
Probation period	6 months
Annual leave	Full-time employees are entitled to annual paid leave of 41 days inclusive of public holidays. This entitlement is pro rata in the holiday year of commencement of employment and in the year your employment terminates.
Pension eligibility	Universities Superannuation Scheme (USS). Pension scheme details, including information about the legal requirement for the University to automatically enrol its eligible jobholders into a qualifying workplace pension scheme from 1 March 2013, is available at: http://www.pensions.admin.cam.ac.uk/ .
Retirement age	The University does not operate a retirement age for research staff.

Screening Check Requirements

We have a legal responsibility to ensure that you have the right to work in the UK before you can start working for us. If you do not have the right to work in the UK already, any offer of employment we make to you will be conditional upon you gaining it. If you need further information, you may find the Right to Work page within the 'Applying for a job' section of the University's Job Opportunities pages helpful (please see <http://www.jobs.cam.ac.uk/right/have/>).

Application Process

To submit an application for this vacancy, please click on the link in the 'Apply online' section of the advert published on the University's Job Opportunities pages. This will route you to the University's Web Recruitment System, where you will need to register an account (if you have not already) and log in before completing the online application form.

The closing date for applications is Wednesday 1st December 2021. If you have any questions about this vacancy or the application process, please contact Miss Joy McSharry (HR Administrator), email: hr@ast.cam.ac.uk. Other enquiries can be directed to Paulina Pieprzyca at pp453@cam.ac.uk

All applications, including required documents and contact details of referees, will need to be submitted online through the University's recruitment system. Any submitted application that does not include **ALL** of the following content required below will not be considered for the Fellowship:

1. **Department support letter:** Each candidate is required to submit a letter from a SPS Department / Research Group in Cambridge that outlines their willingness to host and support the candidate's research during the Fellowship. Candidates are advised to contact the relevant Department and / or principal investigator(s) directly **prior** to submission.
2. **Research project summary:** One page summary of your proposed project, including the name of the SBS Department / Research Group within which you hope to join.

3. **Research project description:** A detailed description (maximum of 4 pages) of the proposed project. You are advised to consult the relevant Department and / or other resources to ensure that your proposal is appropriately related to the group which you hope to join.
4. **Curriculum vitae:** Maximum of 3 pages outlining academic career, qualifications and full list of publications to date; please include hyperlinks of 3 best publications (not full copies).
5. **References:** Contact details of 3 referees. The completed references will be required by 13th December 2021. Please ensure that selected referees are fully contactable throughout the process. Upon submission of your application, referees will be directly contacted to request that they upload a reference for you on the University's online recruitment system.

Read more about the Herchel Smith programmes at the University of Cambridge here:

<https://www.herchelsmith.cam.ac.uk/>

General Information

The University of Cambridge

The University of Cambridge is one of the world's oldest and most successful universities. We are a renowned centre for research, education, and scholarship that makes a significant contribution to society. The University is consistently ranked amongst the top universities in the world. Our affiliates have won more Nobel Prizes than any other University.

Our sustained pursuit of academic excellence is built on a long history of first-class teaching and research within a distinctive collegiate system. For eight centuries our ideas and innovations have shaped the world. Our principal goal is to remain one of the world's leading universities in an increasingly competitive global higher education sector. Today the University of Cambridge is at the centre of a cluster of over 4,300 businesses employing 58,000 people.

Our capital investment projects include the West Cambridge site, the North West Cambridge development and the growth of the Biomedical Campus in the south of the city. The North West Cambridge development includes the opening of a primary school – the first in the UK to be managed by a University. So we are deeply embedded in, and committed to serving, our local community. These are all conspicuous signs of a University that is not only adapting to new needs, but also anticipating the future.

About Us

The University is one of the world's leading academic centres. It comprises 150 faculties and departments, together with a central administration and other institutions. Our institutions, museums and collections are a world-class resource for researchers, students and members of the public representing one of the country's highest concentrations of internationally important collections. The University has an annual income of £2 billion. Research income, won competitively from the UK Research Councils, the European Union (EU), major charities and industry, exceeds £500 million per annum and continues to grow.

The Colleges and the University remain committed to admitting the best students regardless of their background and to investing considerable resources both in widening access and financial support. The 31 Colleges are self-governing, separate legal entities which appoint their own staff. Many academic staff are invited to join a College as a Teaching Fellow, which provides a further social and intellectual dimension. The Colleges admit students, provide student accommodation and deliver small group teaching. The University awards degrees and its faculties and departments provide lectures and seminars for students and determine the syllabi for teaching and conducting research.

Our instinct for seeking out excellence and setting up enduring and mutually beneficial collaborations has led us to establish strategic partnerships across the globe. Whether it is the successful Cambridge-Africa Programme involving universities in Ghana, Uganda and elsewhere on the African continent; or the close association with the government of India to pursue new research in crop science; or the creation, with Germany's Max Planck Institutes, of a Cambridge-based centre for the study of ethics, human economy and social change – international partnerships are now an inextricable part of the University's make-up.

The School of Physical Sciences

<https://www.physsci.cam.ac.uk/>

More information about the School of Physical Sciences and its Departments can be found on the School's website: <https://www.physsci.cam.ac.uk/departments>. For discipline-related queries, please contact the relevant Head of Department or principal investigator directly.

Institute of Astronomy

The Institute of Astronomy (IoA) represents the largest concentration of research astronomers in the United Kingdom. The original Observatory building has been extensively renovated, the Hoyle building has been modernised and extended, while the community has recently been extended and enriched by the addition of new buildings to accommodate the Kavli Institute for Cosmology and the Battcock Centre (Cavendish Astrophysics) on the Institute's site.

The research complement of the Department consists of 18 permanent university teaching staff, approximately 75 post-doctoral researchers, fellows and long-term visitors, and some 45 graduate students. The Institute is characterised by an extremely broad range of research interests; theoretical work spans aspects of cosmology, high-energy astrophysics and exoplanet, stellar, Galactic and extragalactic astronomy, and observational work encompassing a similar range of topics is carried out using ground-based (Vista Hemisphere Survey, Local Volume Legacy) and space-borne facilities in the X-ray, ultra-violet, optical and infra-red spectral regions (XMM, Gaia, Planck).

There is an active visitor and conference programme. Several seminars per week are held during term time. In most years, one, and often two, international conferences are held, embracing a wide range of subject areas.

The IoA hosts the Cambridge Astronomical Survey Unit, which is a leading participant in data reduction and analysis for survey astronomy, including development of the Astrophysical Virtual Observatory, and its application to major ground and space projects.

Additional information is available at <http://www.ast.cam.ac.uk/>.

Department of Physics

The Cavendish Laboratory was founded in 1871, with the simultaneous appointment of James Clerk Maxwell as the first Cavendish Professor. It has a distinguished history of contribution to science. Thirty-three Nobel prizewinners have worked for considerable periods within the laboratory, and the Cavendish is associated with many notable discoveries, including the identification of the electron and neutron, the structure of DNA, and the discovery of pulsars. In 1973, the Laboratory moved from the centre of Cambridge to new buildings on a greenfield site, two kilometres west of the city centre. This formed the nucleus for the University's development of a new physical science campus in West Cambridge. This currently hosts the Departments of Materials Science and Metallurgy, Computer Science, parts of Engineering, the Institute of Astronomy, Veterinary Science, the University's Information Services, the headquarters of the British Antarctic Survey, Schlumberger Research and a variety of small technology companies. The Department of

Physics is also currently engaged in the construction and development of a set of new buildings on the site associated with its emerging research activities.

The Department (together with the Institute of Astronomy) submitted the research of 161 members for the 2014 National Research Excellence Framework performed by the Higher Education Funding Council for England (HEFCE) and 91% of submissions were rated as internationally excellent or world-leading.

Technical support for research includes mechanical workshop facilities equipped with a wide range of CNC machines for the production of novel apparatus, staffed with technicians accustomed to working in a research environment. There is also an electronics workshop with a wide range of capabilities in analogue and digital design and production. The department also runs its own helium liquefier.

Research activities span a wide range of physics, and are currently loosely organised under the following research themes: Astrophysics, High Energy Physics, Biological and Biomedical Physics, Energy Materials, Emergent Quantum Phenomena, Assembly and Function of Complex Systems and Quantum Devices and Measurements, underpinned by Theoretical and Computational Physics. Information about the current research activities in these areas is available at <https://www.phy.cam.ac.uk/research>.

The Department is engaged in a number of new inter- and cross-disciplinary research programmes. In 2008 it established a new **Physics of Medicine** programme focusing on biological and biomedical applications of physics which is based in a new purpose-built interdisciplinary centre on the Laboratory site. A new building opened in October 2013 hosting the **Battcock Centre for Experimental Astrophysics**. This is adjacent to the Kavli Institute for Cosmology in Cambridge and to the main buildings of the Institute of Astronomy.

A new era is beginning for Physics at Cambridge, with construction work well underway for a new purpose-built centre for world-leading research, replacing our current buildings which date from 1971. The new building, the Ray Dolby Centre, and our strategic plan, both represent a renaissance in the way we carry out physics research and achieve our research goals. The spirit of adventure and innovation will be fostered in the Cavendish tradition, but adapted to the new needs of frontier research.

Department of Applied Mathematics and Theoretical Physics

The Department of Applied Mathematics and Theoretical Physics is one of the largest and strongest departments of its kind in Europe. DAMTP is a large Department with around 50 academic staff and almost 100 contract research staff. There are also 20–30 visiting academics, 130 postgraduate research students and 100 graduate students. Over 800 undergraduate and postgraduate students are enrolled in Parts I to III (Years 1 to 4) of the Mathematical Tripos. Part III is not only the fourth year of the undergraduate course, but attracts more than 100 students each year from outside Cambridge, who take it as a one-year postgraduate course, leading to a Masters degree.

DAMTP shares responsibility for teaching in the Mathematical Tripos with its sister Department, the Department of Pure Mathematics and Mathematical Statistics (DPMMS). DAMTP also has responsibility for teaching mathematics to undergraduates taking Natural Sciences. DAMTP and DPMMS are accommodated, along with the Isaac Newton Institute for Mathematical Sciences and the Betty and Gordon Moore Library (covering mathematics, physical sciences and technology) at the Centre for Mathematical Sciences, a purpose-built complex in Wilberforce Road.

Current research in DAMTP is loosely organised into eight broad subject areas: Applied and Computational Analysis, Astrophysics, Geophysics, Fluid and Solid Mechanics, Mathematical Biology, Quantum Information, High Energy Physics and General Relativity and Cosmology. The boundaries between the areas are not rigid and evolve with time. Many members of staff contribute to more than one area and this is regarded as a key factor in the continuing success of DAMTP.

Research in each of DAMTP's subject areas involves collaboration with strong groups nationally and internationally, and participation in numerous interdisciplinary projects and programmes. Many members of

DAMTP have valuable links with industry and other non-academic sectors. For more information please see: [http:// www.damtp.cam.ac.uk/research](http://www.damtp.cam.ac.uk/research).

There are strong links with the Isaac Newton Institute for Mathematical Sciences. At any time the Institute runs two parallel research programmes, each usually lasting six months and attracting several dozen mathematical scientists nationally and internationally. In several areas there are also links to research in DPMMS ([https:// www.dpmms.cam.ac.uk/](https://www.dpmms.cam.ac.uk/)), including in general relativity and the analysis of Einstein's equations, and to other Departments within the School of Physical Sciences (<http://www.physsci.cam.ac.uk/researchinsps>).

Further general information about the University of Cambridge, the Department of Applied Mathematics and Theoretical Physics, and Mathematics in Cambridge may be found on the websites: [http:// www.cam.ac.uk](http://www.cam.ac.uk), <http://www.damtp.cam.ac.uk> and <http://www.maths.cam.ac.uk>.

Working at the University

Working at Cambridge you will join a diverse, talented and innovative community, with more than 18,000 students and over 16,000 staff from all walks of life and corners of the world. The University continually explores strategies to attract and retain the best people. It is committed to supporting its staff to achieve their best. We are a fair, diverse and inclusive society and we believe our staff are our greatest asset. There is strong commitment to developing institutional leadership and supporting and encouraging staff development at all levels.

We offer a variety of roles including academic, research, professional, managerial and support roles. We also offer extensive benefits and excellent learning opportunities within a stimulating working environment. The University's estate is undergoing the most significant transformation in its history. Cambridge has been able to create a new science and technology campus to the west of the city centre, and is now expanding further to the north west of Cambridge including investing in affordable homes for University key workers and community facilities. Even with our continued development, the University remains within walking or cycling distance across the campus. The University is a major partner on the Cambridge Biomedical Campus and we continue to redevelop our historic city centre sites demonstrating our determination to ensure that we can offer the best facilities and opportunities for our staff and students.

Equality and Diversity

The University has built its excellence on the diversity of its staff and student community. We aim to be a leader in fostering equality and inclusion, and in promoting respect and a sense of belonging for all. We encourage applications from all sections of society. All appointments are made on the basis of merit. We have an Equal Opportunities Policy, along with a range of diversity networks for women, black and minority ethnic and lesbian, gay, bisexual and transgender staff. More details are available here: <http://www.equality.admin.cam.ac.uk/>

The University has a bronze Race Equality Charter aware, with framework for improving the representation, progression and success of minority ethnic staff and students within higher education. Furthermore, the University's Athena SWAN award recognises and celebrates good practice in recruiting, retaining and promoting women.

Living in Cambridge

From beautiful University and College buildings, museums and art galleries, quaint gardens and punts on the River Cam, to a vibrant restaurant and café scene, our employees are surrounded by the wonderful features of this unique city.

You can find a wide-range of high street shops and 3 shopping centres, with independent alternatives at the historic market and nestled within the passageways in the city centre. You will find a cinema, bowling alley, a nightclub and various live performances At the Cambridge Leisure Park, with further entertainment options at the Corn Exchange, Arts Theatre and the ADC Theatre. Further information can be found on the [Visit Cambridge](#) website.

If you prefer the faster pace of life, London is a 45-minute train journey away. For those travelling from overseas, Stansted Airport is just 45 minutes away and Heathrow Airport under two hours away. The University is a short distance from a host of other attractions such as Ely Cathedral, Newmarket Races and various wildlife parks and stately homes. Cambridge is also within easy reach of the beautiful Broads and coastlines of Norfolk and Suffolk.

Relocation Support

The University recognises the importance of helping individuals to move and settle into a new area. We provide support and guidance to those relocating internationally or domestically to take up a post at the University of Cambridge, liaising with other University offices and selected partners to ensure comprehensive relocation support is available. This includes: accommodation, childcare, schools, banking, immigration and transport. If you would like further information, please visit <https://www.accommodation.cam.ac.uk/>. The Shared Equity Scheme and the Reimbursement of Relocation Expenses Scheme provide financial assistance to qualifying new members of staff with the costs of relocating to Cambridge.

Accommodation Service

The University Accommodation Service helps staff, students and visiting scholars who are affiliated to the University in their search for suitable accommodation in Cambridge. The dedicated accommodation team can provide access to a wide range of University-owned furnished and unfurnished properties, and has a database of private sector accommodation available for short and long-term lets. For further information and to register with this free service please visit <https://www.accommodation.cam.ac.uk/>

What Cambridge can offer

We offer a comprehensive reward package to attract, motivate and retain high performing staff at all levels and in all areas of work.

The University offers a wide range of competitive benefits, from family leave entitlement, to shopping and travel discount schemes. Our generous annual leave package contributes to the positive wellbeing of our University employees. Sabbatical leave enables academics to focus on research and scholarship, whilst still maintaining their full salary. The University also has a [career break scheme for academic and academic-related staff](#), with additional flexible working policies for all other staff.

Pay and benefits

The University salary structure includes automatic service-related pay progression in many of its grades and an annual cost of living increase. In addition to this, employees are rewarded for outstanding contribution through a number of regular pay progression schemes. The University offers attractive pensions schemes for employees, with an additional benefit of a salary exchange arrangement providing tax and national insurance savings. Payroll giving is also a simple, tax-efficient way for employees to make monthly donations to charity.

CAMbens employee benefits

We offer a CAMbens scheme for University employees, providing access to online and in-store shopping discounts and cashback. With more than 2,000 participating retailers, employees can save money on a wide range of household expenses, from groceries and clothes, to holidays and insurance and much more. A

range of local discounts are also available, helping employees to save money whilst also supporting local Cambridge businesses and a CAMbens Cycle to Work salary sacrifice scheme is also available, which enables employees to save money on transport costs. A 10% discount rate on the [purchase of train season tickets, bulk buy tickets](#) and an interest free travel to work loan are also available for staff of the University.

Family-friendly policies

The University recognises the importance of supporting its staff. We have a range of family-friendly policies to aid employees' work-life balance including a generous maternity, adoption and shared parental leave entitlement of 18 weeks full pay and emergency family care support via My Family Care. Other family-friendly support includes: Our highly regarded workplace nurseries, a childcare salary exchange scheme and a high-quality holiday Playscheme may be available to help support University employees with caring responsibilities (subject to demand and qualifying criteria). Further childcare information can be found here: <https://www.childcare.admin.cam.ac.uk/>

The [Newcomers and Visiting Scholars Group](#) is an organisation within the University run by volunteers whose aim is to help newly arrived wives, husbands, partners and families of Visiting Scholars and members of the University to settle in Cambridge and give them an opportunity to meet local people. The Office of Postdoctoral Affairs supports the postdoctoral community within Cambridge. Further details are available here: <https://www.opda.cam.ac.uk/>

Your wellbeing

The University's Sport Centre, Counselling Services and Occupational Health are just some of the support services available to University employees to promote their physical and mental wellbeing. There are many societies in Cambridge catering for almost every taste and interest. Whether you want to take part in a sport, participate in music or drama, pursue a hobby, or join a political group, you will almost certainly find that a society exists for this purpose. The University also hosts the [Cambridge Science Festival](#) and [Cambridge Festival of Ideas](#), as well as [Open Cambridge](#) weekend, which together attract over 50,000 visitors per year. The festivals are a great opportunity to get your first taste of public engagement, through volunteering, supporting hands-on activities or proposing a talk.

Development opportunities

We support new employees to settle in through various activities. The encouragement of career development for all staff is one of the University's values and we put this into practice through various services and initiatives. Our Personal and Professional Development Department provides development opportunities and courses for all University employees. These include face-to-face sessions, online learning modules and webinars. Employees may also apply for financial support to undertake training that will lead to a qualification. We offer reduced staff fees for University of Cambridge graduate courses and the opportunity to attend lectures and seminars held by University departments and institutions. The CareerStart@Cam programme also supports employees in assistant staff roles who do not hold higher education qualifications to develop their skills, experience and qualifications.

Information if you have a Disability

The University welcomes applications from individuals with disabilities. We are committed to ensuring fair treatment throughout the recruitment process. We will make adjustments to enable applicants to compete to the best of their ability wherever it is reasonable to do so and, if successful, to assist them during their employment. Information for disabled applicants is available at <http://www.admin.cam.ac.uk/offices/hr/staff/disabled/>