



**OPPORTUNITY**

Where change  
gets real.



**Reference: 1130-25**

**Grade: 8**

**Salary: £38,784 to £47,389, per annum, depending on experience**

**Contract Type: Fixed Term (up to 36 months)**

**Basis: Full Time**

## Job description

### Job Purpose:

We are seeking to appoint a Postdoctoral Research Associate (PDRA) to work in the field of the Nonlinear Fourier Transform (NFT) and soliton theory and its applications in optical signal processing at the Aston Institute of Photonic Technologies (AIPT). You will join the team of Dr Auro M. Perego, Associate Professor at AIPT, and you will work under the framework of an EPSRC project “Optical Darboux Transformer for nonlinear signal processing”, also in collaboration with Dr. Mingming Tan, Research Fellow at AIPT, and with international project research partners too.

In this three-year post, you will work at state-of-the-art problem in the applications of the nonlinear Fourier Transform and namely at the development of optical filters and multiplexers for the nonlinear spectrum of an optical signal. The research project will build on recent research performed in Dr. Perego's team about the implementation of the mathematical Darboux Transformation in the optical domain resulting in the proposal of the Optical Darboux Transformer (ODT) device to control the nonlinear Fourier spectrum. You will develop your research, in synergy with experimentalists at the AIPT, on the ODT applications in telecom, and for the control of nonlinear dynamics of light in fibre lasers and optical resonators.

The successful candidate will have completed (by the start date of the contract) a PhD degree in Photonics, Theoretical Physics, Optical Engineering, or Electronics and Electrical Engineering, and will have a proven track record in performing independent research in theoretical nonlinear fibre optics, or in soliton theory and the nonlinear Fourier Transform. Previous experience in the analytical investigation and numerical modelling of light propagation in nonlinear optical fibres, fibre lasers or resonators is required. Previous research experience in the field of the Nonlinear Fourier Transform and soliton theory and/or experimental work in nonlinear fibre optics is desirable.

By joining AIPT you will be part of one of the largest research centres in photonics in UK and the Europe. AIPT is an internationally recognised institution at the forefront of research in several fields of photonics including theoretical, numerical, and experimental nonlinear photonics, optical communications, optical sensing and signal processing, optical frequency combs, biophotonics, fibre lasers, and semiconductor lasers. AIPT hosts the UK Multidisciplinary Centre for Neuromorphic Computing and has developed extensive partnerships and collaboration with top level academic and industrial partners worldwide.

### Main duties and responsibilities

- ▶ To perform analytical calculations and numerical simulations in the field of soliton theory and the nonlinear Fourier Transform.
- ▶ To collaborate with experimentalists both within AIPT and with external partners to support experimental setup design, devices numerical control, and data analysis.
- ▶ To travel for research visits to project partners and collaborators overseas.
- ▶ To collaborate with the PI and other team members on research activities where needed.
- ▶ To present scientific results to international conferences and workshops.
- ▶ To help group PI with PhD student co-supervision.
- ▶ To participate with the PI in grant proposals writing where needed.
- ▶ To represent when needed the PI and the group work in internal and external meetings.

**Additional responsibilities**

- ▶ To take part in the meetings and activities of AIPT.
- ▶ To demonstrate the University's leadership values through own actions and behaviour.
- ▶ To undertake such other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.

**Additional responsibilities**

- ▶ Engage in continuous personal and professional development in line with the demands of the role, including undertaking relevant training and development activities to develop themselves and support the development of others.
- ▶ Ensure and promote the personal health, safety and wellbeing of staff and students.
- ▶ Carry out duties in a way which promotes fairness in all matters and which engenders trust.
- ▶ Promote equality of opportunity and support diversity and inclusion as well as working to support the University's environmental sustainability agenda and practices.

## Person specification


	Essential	Method of assessment
<b>Education and qualifications</b>	A PhD degree in photonics, optics, electrical and electronic engineering or theoretical physics (by the contract start date).	Application form
<b>Experience</b>	<p>Experience in theoretical nonlinear photonics including analytical and numerical.</p> <p>Evidence/experience of publishing in reputed journals and evidence of academic and professional achievement.</p> <p>Experience of writing up/contributing to the write up of research for high quality publications.</p> <p>Experience of positive collaboration within and outside of candidate's immediate research team.</p>	Application form and interview
<b>Aptitude and skills</b>	<p>Ability to work in a team and interact with international partners and collaborators.</p> <p>Ability to think independently and develop original research ideas and contributions.</p> <p>Possess strong analytical and research skills.</p> <p>Ability to present data in both a clear and concise manner that is visually appealing.</p> <p>Ability to work independently while taking heed of advice.</p> <p>Ability to prepare written communications to a high standard and communicate effectively and enthusiastically verbally.</p>	Application form and interview

	Desirable	Method of assessment
<b>Experience</b>	<p>Experience of experimental optical system performance characterisation, test bed design and assembly.</p> <p>Evidence/experience in the research about Nonlinear Fourier Transform and soliton theory.</p>	Application form and interview

## University values


All staff are expected to demonstrate/promote the University's values and expectations, which are an integral part of our strategy and underpin the culture of the University. In addition, our leaders are expected to be accountable, help to execute strategic visions of the University and share and set clear expectations that inspire those around them.

Values + Behaviours




### Innovation

We strive for excellence within ourselves and others, providing solutions to new and existing challenges.



### Collaboration

We work best when we are collaborative, working together to contribute to the Aston community.




### Ambition

We strive together for improvement and innovation looking ahead to see the bigger picture.



### Inclusion

We treat everyone in our community equally and how they would like to be treated.



### Integrity

We are open, honest and fair. We take ownership of the way we work and how we treat each other.

## How to apply

You can apply for this role online via our website <https://www2.aston.ac.uk/staff-public/hr/jobs>.

Applications should be submitted by 23.59pm on the advertised closing date.

All applicants must complete an application form, along with your CV.

Any CV sent direct to the Recruitment Team and Recruiting Manager will not be accepted.

If you require a manual application form, then please contact the Recruitment Team via [recruitment@aston.ac.uk](mailto:recruitment@aston.ac.uk).

## Contact information

### Enquiries about the vacancy:

Name: Dr Auro Perego

Job Title: Associate Professorial Research Fellow

Email: [a.perego1@aston.ac.uk](mailto:a.perego1@aston.ac.uk)

### Enquiries about the application process, shortlisting or interviews:

Recruitment Team via [recruitment@aston.ac.uk](mailto:recruitment@aston.ac.uk) or 0121 204 4500.

## Additional information

Visit our website <https://www2.aston.ac.uk/staff-public/hr> for full details of our salary scales and benefits Aston University staff enjoy.

**Salary scales:** <https://www2.aston.ac.uk/staff-public/hr/payroll-and-pensions/salary-scales/index>

**Benefits:** [Benefits and Rewards | Aston University](#)

**Working in Birmingham:** <https://www2.aston.ac.uk/birmingham>

**Employment of Ex-Offenders:** Under the Rehabilitation of Offenders Act 1974, a person with a criminal record is not required to disclose any spent convictions unless the positions they applying for is listed an exception under the act.

**Eligibility to work in the UK:** You should ensure that you meet the eligibility requirements, including meeting the [English language standards](#). If you do not meet the eligibility criteria, any application for a work visa would be unsuccessful. Please see UKVI guidance for further information on eligibility, knowledge of English requirements and approved test centres <https://www.gov.uk/tier-2-general>

With the end of free movement for EU/EEA/Swiss nationals from 1 January 2021, the UK's new immigration system applies to all non-UK/Irish nationals who require a visa.

Where an individual is subject to UK immigration control, they will require a visa to work in the UK.

The following individuals do not need a visa for the UK, but do still have to prove their right to work before employment can commence:

- **British Citizens or Irish Nationals**
- **EU/EEA/Swiss nationals with Settled or Pre-settled status under the EU Settlement Scheme**
- **Non-EEA nationals with Indefinite Leave to Remain/Settlement in the UK**

The main routes available for those who need a visa to work in the UK are **Skilled Worker**, **Global Talent** and the **Graduate Route**.

You can find further information about each of these visa routes on our candidate immigration page.

If you will conduct research in your role, you may need to apply for and obtain ATAS clearance before Aston can issue a Certificate of Sponsorship for your visa application. Please see below for further details.

### **Academic Technology Approval Scheme (ATAS):**

If you will conduct research in your role and you apply for a Skilled Worker or Temporary



Worker GAE visa, you may need to apply for and obtain ATAS clearance before Aston can issue a Certificate of Sponsorship for your visa application.

This process can take at least 6 weeks to process, and Aston will consider this when confirming your expected start date. Processing times will increase between April and September and can longer to complete.

There is no fast-track option available. ATAS certificates will be processed in order of receipt.

You can find more information about ATAS on our candidate immigration page.

## **Before you start and Right to Work**

### 90-day entry vignette

If you have applied for your visa outside of the UK, you will receive a vignette in your passport which is usually valid for 90 days. Please make sure to travel to the UK within the 'valid from' and 'valid to' dates on this visa. If you entered the UK before or after these dates, you would not 'activate' the visa and you would need to leave and re-enter the country.

You will also receive a decision letter confirming details about your immigration permission and where to collect your Biometric Residence Permit.

### Cost of Living - Estate and Letting Agents

There are numerous Estate and Letting Agents in and around Birmingham that can help you find suitable accommodation. The Midland Landlord Accreditation Scheme provides a list of professional agencies and landlords who have applied with them for accreditation. Whilst accreditation is not a guarantee of quality, it provides some reassurance about the standard of the service they provide.

You can also use property search websites such as Rightmove or Zoopla.

## **Equal Opportunities**

Aston University promotes equality and diversity in all aspects of its work. We aim to ensure, through our admissions policies for students, and our staff recruitment and selection processes that we encourage applications from all groups represented in the wider community at a local, national and international level.

The University will endeavour not to discriminate unfairly or illegally, directly or indirectly, against student or potential students, staff or potential staff. This commitment applies to all functions of the University and to any stage of an individual's career.

An Equal Opportunities Monitoring Form is included within the application form. Data you provide on the Equal Opportunities Monitoring Form will be included in a general database, for statistical monitoring purposes, enabling the University to monitor the effectiveness of its



Policy, Codes of Practice and Guidelines on Equal Opportunities in Employment.  
Individuals will not be identified by name.

**Data Protection**

Your personal data will be processed in compliance with the Data Protection Act 2018 and the General Data Protection Regulation ((EU) 2016/679) ("GDPR"). The University's Data Protection Policy and Privacy Notices, including the Job Applicant Privacy Notice can be found at <https://www2.aston.ac.uk/data-protection>. Your application will only be used to inform the selection process, unless you are successful, in which case it will form the basis of your personal record with the University which will be stored in manual and/or electronic files. Information in statistical form on present and former employees is given to appropriate outside bodies.

Full details of our terms and conditions of service and associated policies and procedures are available online at <https://www2.aston.ac.uk/staff-public/hr/policies>

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