Reference: R200101

Salary: £38,100 to £39,900

Contract Type: Fixed Term (36 months)

Basis: Full-time

Closing Date: 30 April 2020

Interview Date: To be confirmed

Early Stage Researcher in European Training Network doctorate, project MEFISTA
Job description

Job Purpose:
Applications are invited by Aston Institute of Photonic Technologies (AIPT) for a prestigious three year postgraduate position as Early Stage Researcher (ESR) within the European Training Network project MEFISTA. The project is supported through the Horizon 2020 Marie Sklodowska-Curie Actions (MSCA).

MEFISTA - Multi-scale fibre-based optical frequency combs: science, technology and applications – is a European Training Network consortium of high profile universities in the United Kingdom, Barcelona, France and Switzerland. MEFISTA includes academic partners, being Aston University, Universitat Politecnica de Catalunya, Universite de Lille and Ecole Polytechnique Federal de Lausanne, as well as, industrial partners being Richmond Design & Marketing Limited (Coventry, UK); NKT Photonics A/S (Birkerod, Denmark). MEFISTA will provide a world-class advanced training programme to 6 ESRs to the level of the next generation of leaders in the fields to the level of the next generation of leaders in the fields MLLs-based OFCs technologies.

Background of the Project
The key photonic technology that enables a cluster of applications and so is a driving force for an expanding photonics market in the context of addressing the global challenges is an optical frequency comb (OFC) technology based on mode-locked femtosecond lasers (MLFLs). To respond to the huge demand for qualified experts on OFC technologies, MEFISTA will deliver research and training collaborations that will help ESRs to acquire unique knowledge and research skills on OFC technology from the theory to implementation: development of novel mode-locking techniques and speciality fibres and waveguides for MLFLs, mid-infrared (mid-IR) tunable dual combs sources for molecular fingerprinting, design and characterisation of dual-comb MLFLs, and MLFLs manufacturing. A special focus will be the industrial applications related to development and trial tests of MLFLs in the context of autonomous driving (car-object distance ranging, object recognition, moving objects speed tracing: Doppler LIDAR). The requirement of a new generation of LIDAR with object recognition ability is driven by the demand of high safety standards that autonomous driving vehicles will have to satisfy to guarantee an efficient service to society, by minimising the risk of accidents, especially in harsh and unpredictable environments.

The positions are for 36 months and expected to begin in early spring 2020 (subject to negotiation).
More information on the project can be found here: https://cordis.europa.eu/project/id/861152

Training and Secondments
The Training Programme (TP) will be implemented through the unique combination of the “hands-on” research training, non-academic placements and advanced inter/multidisciplinary/ inter-sectoral training on nonlinear science, laser physics, fibre optics, and autonomous driving technologies and transferable skills including Research Integrity, Gender Dimension in Research, and Open Science. Successful applicant will spend 3 months at NKT, 3 months at RDM.
Main Duties/Responsibilities:

- Development, theoretical and experimental characterisation of fibre- and waveguide-based ellipsometric optical frequency comb (EOFC) lasers in the context of applications for the distance ranging and target texture recognition.
- Trial tests of the EOFC lasers in the context of the distance ranging and detection of ellipsometric signatures of the objects with a different texture (plastic, metal, glass, textile, wood etc.).
- Trial tests of the EOFC in the context of the distance ranging and objects recognition under conditions emulating fog, rain and dust.
- To contribute to publications of research outcomes in high impact journals and major international conferences. To contribute to the delivery of reports associated with assigned projects.
- To contribute to research initiatives with colleagues in and beyond the School as appropriate.
- To engage in training and professional development programmes in the University consistent with personal needs and aspirations and with the strategic goals of the Institute.
- To support the development of further research proposals.
- To undertake such other duties.

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.

MSCA Eligibility

Applicants must be Early Stage Researchers (ESR), i.e. be in the first four years (full-time equivalent research experience) of their research careers, and not have been awarded a doctoral degree.

Full-time equivalent research experience is measured FROM the date when the researcher obtained the degree entitling him/her to embark on a doctorate (either in the country in which the degree was obtained or in the country in which the researcher is recruited) – even if a doctorate was never started or envisaged. Research Experience is measured TO the first day of the MEFISTA employment contract of the researcher.

MSCA Mobility

Researchers may not have resided or carried out their main activity (work, studies, etc.) in the UK for more than 12 months in the 3 years immediately before the first day of MEFISTA employment. Short stays, such as holidays, are not taken into account.

As part of your application form, you will need to attach the following documents:

- Degree Certificate(s). If your qualifications are from an overseas institution please provide transcripts of the marks you have already achieved with your application.
- English Language Certificate, if appropriate.
- A copy of your passport (All pages).
- Completed and signed MSCA Compliance Form.
# Person specification

### Essential

<table>
<thead>
<tr>
<th>Education and qualifications</th>
<th>BSc or MSc qualification in Physics, Electrical Engineering, Computer Science, or equivalent. Applicants must be Early Stage Researchers</th>
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</thead>
<tbody>
<tr>
<td>Experience</td>
<td>Experience in theoretical and experimental physics, knowledge of scientific programming and computing, particularly in the context of application to theoretical and experimental physics and photonics. Knowledge in theory of differential equations, mathematical physics, numerical analysis, information and communication theory is an asset</td>
</tr>
<tr>
<td>Aptitude and skills</td>
<td>Creative problem solving skills Excellent English Language: Minimum requirements can be found in the section “English Language Entry Requirements” detailed <a href="#">here</a> Ability to contribute and coordinate collaborative project reports and deliverables</td>
</tr>
</tbody>
</table>

### Method of assessment

- Application form
- Application form, interview and presentation
- Application form and Interview

### Desirable

<table>
<thead>
<tr>
<th>Education and qualifications</th>
<th>MSc qualification in Physics, Electrical Engineering, Applied Mathematics, Computer Science, or equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience</td>
<td>Experience in experimental work, knowledge of scientific programming and computing, physical optics, communications Experience of initiating and conducting research up to doctoral level Experience of writing up/contributing to the write up of research of high quality publications Experience of producing papers, posters, reports presenting at seminars, conferences etc. Experience of positive collaboration within and outside the immediate research team</td>
</tr>
<tr>
<td>Aptitude and skills</td>
<td>Ability to present data in both a clear and concise manner</td>
</tr>
</tbody>
</table>

### Method of assessment

- Application form
- Application form, interview and presentation
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### Desirable

<table>
<thead>
<tr>
<th>Method of assessment</th>
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<tr>
<td>Ability to prepare written and oral communications to a high standard</td>
</tr>
<tr>
<td>A willingness to undertake further training as appropriate and to adopt new procedures as and when required</td>
</tr>
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### How to apply

You can apply for this role online via our website [https://www2.aston.ac.uk/staff-public/hr/jobs](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 [jobs@aston.ac.uk](mailto:jobs@aston.ac.uk).

### Contact information

**Enquiries about the vacancy:**
Name: Sergey Sergeyev  
Job Title: Ass. Prof.  
Tel: +44 121 204 4341  
Email: s.sergeyev@aston.ac.uk

**Enquiries about the application process, shortlisting or interviews:**
Recruitment Team via [jobs@aston.ac.uk](mailto:jobs@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: https://www2.aston.ac.uk/staff-public/hr/Benefits-and-Rewards/index

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: Candidates who are not citizens of the United Kingdom, or another EEA member country, should check their eligibility to enter or remain the UK in advance of making any job application via the UKVI website https://www.gov.uk/browse/visas-immigration/work-visas. Before applying you should ensure that you meet the requirements, including meeting the English language standards. If you do not meet the eligibility criteria, any application for a work visa would be unsuccessful.

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 Act 1998: Your personal data will be processed in compliance with the DPA and from 25 May 2018 with the 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/poli