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Job Description

Post title: **Research Fellow: Fisher Information in Nanophotonics**

Date last updated/evaluated: May 2025

Author: Kevin MacDonald

Standard Occupation Code: 2119

School / Department: Optoelectronics Research Centre

Faculty / Directorate: Engineering and Physical Sciences

Job Family: Education, Research and Enterprise (ERE)

Grade: Level 4

ERE Pathway (if applicable): Research

Post reporting to: Prof Kevin MacDonald

Post line report(s): N/A

Post base location: Campus **:** Highfield

Job purpose: Research: Building research skills, experience and networks, with appropriate guidance, support and supervision. Work is typically focused on a personal programme of research or contributing to wider programmes of research.

Leadership, Management and Engagement: Planning own work and contributing effectively to leadership, management and engagement activities, with appropriate guidance, support and supervision.

## Key accountabilities and indicative time allocation:

1. **85%**

**Research Contribution**:

* Develop and progress a programme of research as part of a project team.
* Develop rigorous and original research contributions that lead to the discovery of new knowledge, insight and/or understanding.
* Regularly produce and/or contribute to research outputs, establishing visibility and credibility among subject-relevant research communities, within and beyond the University.
* Contribute to income proposals.
* Collaborate and network productively with colleagues in own and other departments, disciplines and/or organisations. Engage with a range of public groups, partners or organisations, as appropriate.
* Develop knowledge and understanding of research methodologies (e.g., testing, analysis, interpretation, critical evaluation); select and apply these effectively.
* Contribute to the effective co-creation, sharing of and engagement with research and research findings by a range of audiences (e.g., academic peers, practitioners, policymakers, publics), using a range of methods (e.g., peer-reviewed publications, conferences, public engagement, outreach, media releases).
* Ensure that research outputs are findable, accessible, interoperable and reproducible (FAIR) and, wherever possible, open access.
* Contribute to the supervision of postgraduate students.
1. **5%**

**Leadership, Management and Engagement Contribution**:

Building on the Leadership, Management and Engagement contributions inherent in other Level 4 activities:

* Plan and prioritise own work effectively.
* Undertake defined tasks and contribute effectively to research group management, engagement, or administration work.

Optionally (in consultation with line manager):

* Contribute to the wider work of the Faculty and University through effective participation in working groups and committees (e.g., Equality, Diversity and Inclusion committees and self-assessment teams, Health and Safety committees, Research Ethics committees etc.).
* Help prepare for and/or participate in visit days, open days and public engagement activities
1. **5%**

Allocate 10 days a year (pro rata if part-time) to undertake training and continuing professional development (CPD), develop research identity and leadership skills in line with the Researcher Development Concordat.

1. **5%**

Any other duties as allocated by the line manager following consultation with the post holder.

Internal and external relationships:

Other members of the department/University staff

External research project partners

Relevant suppliers

Special requirements:

Will be required to work in cleanroom facilities and laser laboratories.

Will be required to travel for the purpose of disseminating research results at national and international conferences.

May be required to travel for the purpose of collaborative work with external research project partners.

# Person Specification – Skills and Competencies

All essential and desirable criteria outlined in this Person Specification will be assessed through a combination of recruitment application and CV.

**Knowledge, Experience and Qualifications**

Essential

* PhD or equivalent qualification/experience (or expected award thereof within 6 months) in Physics or another subject relevant to the field of optics/(nano)photonics.
* Substantial and authoritative practical knowledge and experience in the field of information theory applied to optics/(nano)photonics, supported by detailed understanding.

Desirable

* Experience in development of precise, high-sensitivity optical experiments and instrumentation, including digital mirror devices for complex light field generation.
* Recent experience as a user/operator of thin film micro/nanofabrication and materials characterization tools.
* Knowledge and experience in theoretical and/or computational electromagnetics; and/or numerical/multi-physics modelling (e.g. finite element or FDTD).

**Teamwork and Communication**

Essential

* Collaborates effectively, understanding the strengths and weaknesses of colleagues.
* Works proactively with colleagues and other stakeholders, within and beyond the University, to achieve outcomes.
* Communicates effectively to develop understanding and achieve cooperation.
* Provides clear advice, guidance and recommendations on novel or complex concepts and issues.
* Demonstrates ability to deliver high-quality research outputs.

**Planning, Organisation and Resource Management**

Essential

* Plans and progresses research activities within broad guidelines and established University policies and procedures.

**Problem Solving and Initiative**

Essential

* Develops detailed understanding of long-standing and/or complex problems and applies accumulated knowledge and experience to understand and/or resolve them.
* Demonstrates an awareness of principles and trends within a specialist field and awareness of how this affects research activities.

# Job Hazard Assessment

A full health clearance is required for this role where any hazards marked “**^**”, using the agreed Occupational Health referral template [available from here](https://sotonac.sharepoint.com/teams/HealthWellbeing/SitePages/Occupational-Health.aspx). Where a full health clearance is required, this will apply to all role holders, including existing members of staff.

## Physical Environment

Working outside **^** Not applicable

Exposure to noise levels >80dbA **^** Not applicable

Working with dust or fumes **^** Not applicable

Working with skin irritants **^** Not applicable

Working with chemicals (industrial or cleaning) **^** Not applicable

Working in a confined space **^** Not applicable

Working at height **^** Not applicable

Working with sewage **^** Not applicable

Contact with cytotoxins **^** Not applicable

Exposure Prone Procedure (EPP) work **^** Not applicable

Contact with clinical specimens or pathology work **^**  Not applicable

Direct patient care or patient contact Not applicable

Exposure to temperature extremes Not applicable

Frequent hand washing Not applicable

Ionising radiation Not applicable

## Psychological and Social Environment

Working shifts **^** Not applicable

Working nights **^** Not applicable

Lone working Occasionally <30% Time

Working with children Not applicable

Exposure to persons with challenging behaviourNot applicable

Working with larger groups Occasionally <30% Time

## Equipment, Tools and Machines

Working with vibrating machinery or tools **^** Not applicable

Driving duties e.g. LGV, PCVs, forklift trucks **^** Not applicable

Food handling Not applicable

Contact with latexNot applicable

## Physical Abilities

Prolonged physical movements or actions e.g. walking **^** Not applicable

Prolonged Standing or Sitting **^** Not applicable

Moving or handling heavy loads **^** Not applicable

Repetitive pulling or pushing **^** Not applicable

Repetitive climbing (steps, stools, ladders, stairs) **^** Not applicable

Repetitive crouching, kneeling or stooping Not applicable

Repetitive lifting Not applicable

Fine motor grips (e.g. pipetting) Occasionally <30% Time

Repetitive reaching below shoulder height Not applicable

Repetitive reaching at shoulder height Not applicable

Repetitive reaching above shoulder height Not applicable

# Behaviours

Our [Inclusion and Respectful Behaviour Policy](https://www.southampton.ac.uk/about/governance/regulations-policies/policies/inclusion-respectful-behaviour) describes the expectations of everyone who is a part of our community.

Our **Southampton Behaviours** (below) outline the responsibilities we each have in working collaboratively to achieve our University strategy.

**Personal Leadership**

 - I take personal responsibility for my own actions and an active approach towards my development.

 - I reflect on my own behaviour, actively seek feedback and adapt my behaviour accordingly.

 - I demonstrate pride, passion and enthusiasm for our University community.

 - I demonstrate respect and build trust with an open and honest approach.

**Working Together**

 - I work collaboratively and build productive relationships across our University and beyond.

 - I actively listen to others and communicate clearly and appropriately with everyone.

 - I take an inclusive approach, value the differences that people bring and encourage others to contribute and flourish.

 - I proactively work through challenge and conflict, considering others’ views to achieve positive and productive outcomes.

**Developing Others**

 - I help to create an environment that engages and motivates others.

 - I take time to support and enable people to be the best they can be.

 - I recognise and value others’ achievements, give praise and celebrate their success.

 - I deliver balanced feedback to enable others to improve their contribution.

**Delivering Quality**

 - I identify opportunities and take action to make improvements.

 - I plan and prioritise efficiently and effectively, taking account of people, processes and resources.

 - I am accountable for tackling issues, making difficult decisions and seeing them through to their conclusion.

 - I encourage creativity and innovation in others, to deliver workable solutions.

**Driving Sustainability**

 - I consider the impact on people before taking decisions or actions that may affect them.

 - I embrace, enable and embed change effectively.

 - I regularly take account of external and internal factors, assessing the need for change, and gaining support to move forward.

 - I take time to understand our University strategy and communicate this to others.