Postdoctoral Research Associate in Atomic & Molecular Physics (2 posts)

Overview

Reference	016833
Department	Physics
Grade	Grade 7
Location	Durham City
Term	Full Time & Fixed Term (36 months)
Salary Range	£33,199 - £35,210 per annum
Opening Date	08 November 2018
Closing Date	10 December 2018 at midday

Durham University

Durham University is one of the world's top universities with strengths across the Arts and Humanities, Sciences and Social Sciences. We are home to some of the most talented scholars and researchers from around the world who are tackling global issues and making a difference to people's lives.
The University sits in a beautiful historic city where it shares ownership of a UNESCO World Heritage Site with Durham Cathedral, the greatest Romanesque building in Western Europe. A collegiate University, Durham recruits outstanding students from across the world and offers an unmatched wider student experience.
Less than 3 hours north of London, and an hour and a half south of Edinburgh, County Durham is a region steeped in history and natural beauty. The Durham Dales, including the North Pennines Area of Outstanding Natural Beauty, are home to breathtaking scenery and attractions. Durham offers an excellent choice of city, suburban and rural residential locations. The University provides a range of benefits including pension and childcare benefits and the University's Relocation Manager can assist with potential schooling requirements.
Durham University seeks to promote and maintain an inclusive and supportive environment for work and study that assists all members of our University community to reach their full potential. Diversity brings strength and we welcome applications from across the international, national and regional communities that we work with and serve.

The Department

These posts offer an exciting opportunity to make a major contribution to the development of research and teaching in the Department of Physics and the successful candidate will be expected to contribute to our portfolio of research-led teaching activities.

The Department of Physics at Durham University is one of the very best UK Physics departments with an outstanding reputation for excellence in teaching, research and employability of our students. Ranked in the top 10 in REF2014 in terms of grade point

average, 96% of Durham Physics research was considered either to be of “internationally excellent quality” or “world leading”.

The successful candidates will join the Durham Quantum Light and Matter (QLM) group which is a partner in the Joint Quantum Centre (JQC) Durham-Newcastle, broadly dedicated to varied aspects of quantum science. The JQC was founded in 2012, and is composed of members from Durham Physics and Chemistry, and Newcastle Applied Mathematics and Mechanical and Systems Engineering. Our research covers a range of experimental and theoretical topics, with particular strengths in the study of atom-light interactions, quantum optics, Rydberg physics, ultracold molecules and quantum degenerate atomic gases.

The Department is committed to research-led and small group teaching. The Complete University Guide ranks Durham's Physics Department in third place nationally based on entry standards, student satisfaction, research and graduate prospects.

The Role

Applications are invited for two Postdoctoral Research Associate posts in atomic, molecular and optical physics with a particular emphasis on terahertz sensing and imaging using Rydberg atoms. The project is supported by a three-year grant awarded by the EU Quantum flagship programme and a three-year EPSRC grant, both led by Dr. Kevin Weatherill. The broad project goal is to develop terahertz sensors and imaging devices based upon atomic vapours in room temperature cells. The work builds upon pioneering work at Durham described in recent high-impact papers from our group. The work also forms part of a Europe-wide consortium on developing atom-based sensors using vapour cell technologies.

The successful applicants will join a supportive research environment and work directly with Dr Kevin Weatherill and Prof. Charles Adams and other members of the research team. As the project involves collaboration with collaborative partners, the successful applicant will be expected to work closely with and visit these project partners. The successful applicants will be expected to display the initiative and creativity as well as appropriate skills and knowledge required to take a leading role in developing and extending the existing experimental apparatus.

The successful applicants will be expected to have a broad range of knowledge and skills appropriate to the project goals, specifically including some of the following: familiarity with narrowband CW lasers, practical knowledge of laser stabilisation techniques, experience of image capture and analysis. The successful applicants will be expected to work effectively both independently and as part of a research team. It is expected that they will also enhance the international contacts of the group through the presentation of work at international conferences and aid in the supervision of graduate students within the group.

Responsibilities:

- *To understand and convey material of a specialist or highly technical nature to the team or group of people through presentations and discussions that leads to the presentation of research papers in conferences and publications.*

- *To prepare and deliver presentations on research outputs/activities to audiences which may include: research sponsors, academic and non-academic audiences.*
- *To publish high quality outputs, including papers for submission to peer reviewed journals and papers for presentation at conferences and workshops under the direction of the Principal Investigator or Grant-holder.*
- *To assist with the development of research objectives and proposals.*
- *To conduct individual and collaborative research projects under the direction of the Principal Investigator or Grant-holder.*
- *To work with the Principal Investigator or Grant-holder and other colleagues in the research group, as appropriate, to identify areas for research, develop new research methods and extend the research portfolio.*
- *To deal with problems that may affect the achievement of research objectives and deadlines by discussing with the Principal Investigator or Grant-holder and offering creative or innovative solutions.*
- *To liaise with research colleagues and make internal and external contacts to develop knowledge and understanding to form relationships for future research collaboration.*
- *To plan and manage own research activity, research resources in collaboration with others and contribute to the planning of research projects.*
- *To deliver training in research techniques/approaches to peers, visitors and students as appropriate.*
- *To be involved in student supervision, as appropriate, and assist with the assessment of the knowledge of students.*
- *To take a lead role in the data analysis and accurate record keeping of experimental results.*
- *To contribute to the academic life of the wider atomic and molecular physics group in Durham, including participating in weekly meetings and seminars.*
- *To contribute to the Departmental Teaching programme at an appropriate level.*

The posts are available from 01 January 2019 and are fixed term for 36 months.

The post-holders are employed to work on research/a research project, which will be led by another colleague. Whilst this means that the post-holder will not be carrying out independent research in his/her own right, the expectation is that they will contribute to the advancement of the project, through the development of their own research ideas/adaptation and development of research protocols.

The Requirements

Essential:

Qualifications

1. A good first degree in physics.
2. A PhD (or be close to submission) in atomic physics or a closely related subject.

Experience

3. Experience in conducting high quality academic research.
4. Demonstrable ability to write material of a quality commensurate with publication in highly-ranked journals.
5. Demonstrable ability to present research papers at international conferences and communicate complex information to specialists and within the wider academic community.
6. Experience, knowledge and skills in atomic, molecular and optical physics appropriate to the project goals, specifically including some of the following: familiarity with narrowband CW lasers, practical knowledge of laser stabilisation techniques, experience of image capture and analysis.
7. Demonstrable ability to work cooperatively as part of a team, including participating in research meetings.
8. Ability to work independently on own initiative.
9. Excellent interpersonal and communication skills.

Desirable:

Experience

1. Strong publication record in peer-reviewed journals, commensurate with stage of career.
2. A track record of presenting research at conferences, symposia, or meetings, commensurate with stage of career.
3. Demonstrable ability to develop research proposals and designs in collaboration with other academics.
4. Experience of overseeing students with respect to the development of their practical/research skills e.g. acting as a demonstrator; supervising student projects/practicals.
5. Experience in techniques relevant to atomic physics and quantum optics experiments. Examples include laser cooling, basic electronics, development of narrow-linewidth lasers, laser frequency stabilisation and control, image analysis, data acquisition and experimental control.
6. Experience of high-resolution imaging techniques.
7. Ability to model experiments using a software packages such as Python, Matlab or Mathematica.
8. Demonstrable ability to plan and manage independent research.
9. Ability and willingness to contribute to the Departmental Teaching Programme

How to Apply

For informal enquiries please contact Dr Kevin Weatherill (email k.j.weatherill@durham.ac.uk) or Prof. Charles Adams (email c.s.adams@durham.ac.uk) All enquiries will be treated in the strictest confidence.

We prefer to receive applications online via the Durham University Vacancies Site. https://www.dur.ac.uk/jobs/. As part of the application process, you should provide details of 3 (preferably academic/research) referees and the details of your current line manager so that we may seek an employment reference.

Applications are particularly welcome from women and black and minority ethnic candidates, who are under-represented in academic posts in the University.

What to Submit

All applicants are asked to submit:

- A CV and covering letter which details your experience, strengths and potential in the requirements set out above.

Next Steps

The assessment for the post will include a short presentation of your previous research and an interview. Shortlisted candidates will be invited for interview and assessment as soon as possible following the closing date.