

Candidate Information

Position:	Research Fellow - high-field quantum electro-dynamics
School/Department:	Ctre for Plasma Physics
Reference:	21/108953
Closing Date:	Monday 26 July 2021
Salary:	£33,797 per annum
Anticipated Interview Date:	Monday 2 August 2021
Duration:	Fixed Term 24 months, starting on or about 1 September 2021 (in the first instance)

JOB PURPOSE:

To join an EPSRC-funded program (grant No: EP/V049186/1) to carry out research work in high-field quantum electro-dynamics in the field of an intense laser, towards the first studies of quantum effects in the evolution and dynamics of high-density plasmas.

MAJOR DUTIES:

1. To join a large-scale international team to design, carry out, and analyse the results of experimental campaigns at large-scale laser and accelerator facilities.
2. To develop and plan an area of research and expertise in high-intensity laser-matter interactions, high-energy and high-flux detection systems, and high-field quantum electrodynamics.
3. Liaise, on a regular basis, with colleagues at Queen's University Belfast, with national and international project partners, and with large-scale working groups and collaborations.
4. Present regular progress reports on research to members of the research group and to external audiences to disseminate and publicise research findings.
5. Prepare, often in consultation with supervisor, material for publication in national and international journals and presentations at international conferences.
6. Assist the grant holder in the preparation of funding proposals and applications to external bodies.
7. Carry out routine administrative tasks associated with the research project/s to ensure that project/s are completed on time and within budget. These might include organisation of project meetings and documentation, financial control, risk assessment of research activities.
8. Contribute to the supervision of PhD and postgraduate students within the research group.
9. Read academic papers, journals, and textbooks to keep abreast of developments in high-intensity laser-matter interactions and high-field quantum electrodynamics.

Planning and Organising:

1. Plan, in collaboration with the research group at Queen's University Belfast and with national and international partners, experimental campaigns to be carried out at large-scale laser and accelerator facilities.
2. Contribute to the overall planning and management of the project.
3. Plan for the effective use of research resources, laboratories and workshops.
4. Plan own day-to-day activity within framework of the agreed research programme.
5. Plan up to a year in advance to meet deadlines for journal publications and to prepare presentations and papers for conferences.
6. Contribute to the organisation of workshops and research meetings within the collaboration and beyond.
7. Coordinate and liaise with other members of the research group and international partners over work progress.

Resource Management Responsibilities:

1. Ensure research resources are used in an effective and efficient manner.
2. Provide guidance as required to support staff and any students who may be assisting with research.

Internal and External Relationships:

1. Liaise on a regular basis with colleagues and students at Queen's University Belfast.
2. Liaise on a regular basis with the partners in the project and with international collaborators.
3. Build internal and external contacts towards forming relationships for future collaborations.
4. Attend and contribute to relevant meetings, workshops, and research activities.

ESSENTIAL CRITERIA:

1. Hold or about to obtain Ph.D. (or equivalent) in plasma physics, laser physics, or closely related disciplines.
2. 3 years relevant research experience (this may include relevant PhD research)
3. Research interests in the field of high power laser-matter interactions and laser-driven particle acceleration.
4. Demonstrable practical experience with high-power laser systems and laser-plasma interactions.
5. Willingness to contribute to the supervision of postgraduate and final year undergraduate students.
6. Demonstrable ability to contribute to broader management and administrative processes.
7. Sufficient breadth and depth of knowledge in the fields of high-intensity laser-matter interactions.
8. Ability to communicate complex information clearly.
9. Ability to build contacts and participate in internal and external networks.
10. Ability to communicate effectively in English, both verbally and in writing.
11. Demonstrable intellectual ability.
12. Ability to assess and organise resources.
13. Ability to work in a team.
14. Ability to meet the mobility requirements of the post including the travel to large-scale laser and accelerator facilities nationally and internationally.

DESIRABLE CRITERIA:

1. Three years of post-doctoral experience.
2. Demonstrable experience and expertise in numerical and analytical modelling.
3. Demonstrable experience and expertise in Particle Tracing and Monte-Carlo simulation codes.
4. Demonstrable experience and expertise in laser-driven electron acceleration and/or generation of secondary sources.
5. A notable track record of publication and of presentations at international conferences, commensurate with stage of career.
6. Demonstrable experience in contributing to the supervision of postgraduate and final year undergraduate students.
7. Interest in contributing to the School's outreach programme by interacting with industry, community groups, and general public.
8. Demonstrable experience in leading large-scale experimental campaigns.
9. Demonstrable experience in working in large-scale international collaborations.
10. Sufficient breadth and depth of knowledge in high-field quantum electrodynamics.