

JOB DESCRIPTION

Job Title:	Postdoctoral Researcher in Mechanical and Reliability Modelling of Power Components	Grade:	AC1
Department:	School of Computing and Mathematical Sciences	Date of Job Evaluation:	June 2023
Role reports to:	Project PI at University of Greenwich	SOC Code	2119
Direct Reports	None		
This role profile is non-contractual and provided for guidance. It will be updated and amended from time to time in accordance with the changing needs of the University and the requirements of the job.			

PURPOSE OF ROLE:

The main purpose of the role is to conduct independent high-quality research in methods for multi-physics virtual prototyping and validation in power electronics, under the EPSRC project “Real-time Virtual Prototypes for the Power Electronics Supply Chain” (Grant Ref: EP/X024377/1).

The postdoctoral researcher appointed will be expected to:

- Engage in independent research in the area of physics-of-failure and reliability/life-time modelling of power electronic modules (PEMs) with an emphasis on computational mechanics technologies enabling fast simulation times through Model Order Reduction (MOR) approaches.
- Contribute to the research profile of the Department/School and to the 2028 REF submission of the Computational Mechanics and Reliability Group (CMRG) research unit.
- Contribute to the team efforts in the research subject area and help build the reputation and impact of that research across the faculty, University and more widely. Actively engage with all project partners and stakeholders.
- Contribute to the dissemination of high-quality outputs in the specialist areas of research and enterprise.
- Contribute to the effective operation of the CMRG research group and any associated activities.

KEY ACCOUNTABILITIES:**Team Specific:**

- Engage in subject specific research leading to the publication and/or dissemination of original work at levels of national and international excellence as a leading or contributing author.
- Contribute to the research profile of the academic unit and to the REF submission of the Computational Mechanics and Reliability Group.
- Undertake project tasks and activities in close coordination with the project team at the University of Greenwich and the project partners, under the leadership of the Principal Investigator.
- Disseminate research and enterprise findings at targeted national and international conferences, including invited presentations.
- Contribute to research group/department/school activities and efficient working practices
- Promote your work and represent your discipline and the work of the University internally and externally.
- Contribute to relationship management and engagement with key national or regional public/cultural sectors/business, industry/professional bodies in relation to research and/or enterprise.
- Contribute to the general academic administrative work of the Department/School and Faculty

Generic:

- Assist the Computational Mechanics and Reliability Group in achieving the Centre for Advanced Modelling and Simulation and Department/School's KPIs.
- Contribute to research centre/school plans, activities, and efficient working practices.
- Participate, as appropriate, in public engagements, outreach and related activity.
- Demonstrate a commitment to equality, diversity and inclusion through engagement with university initiatives.
- Promote your work and represent your discipline and the work of the University internally and externally and take a proactive approach to research integrity and ethical, good practice.

Managing Self:

- Keep abreast of developments within the field and seek continuous improvement of own professional practice.
- Actively participate in established professional development framework activities, including those provided internally by the University.
- Behave in a manner which reflects the University values and creates a positive environment for work and study.

Core Requirements:

- Adhere to and promote the University's policies on Equality, Diversity and Inclusion and Information Security;
- Ensure compliance with Health & Safety and Data Protection Legislation;
- Support and promote the university's Sustainability policies, including the Carbon Management Plan, and carry out duties in a resource efficient way, recognising the shared responsibility of minimising the university's negative environmental impacts wherever possible;
- Adhere to current legal requirements and best practice relating to digital content and accessibility, including Web Content Accessibility Guidelines when creating digital content.

Additional Requirements:

Undertake any other duties as requested by the line manager or appropriate senior manager, commensurate with the grade.

This is a professional, demanding role within a complex organisation with an ambitious strategic plan in research and knowledge exchange, and agenda for change. The role holder will be expected to show flexibility in working arrangements, including working hours, to ensure that the CMRG research group delivers the required research outputs in the project.

KEY PERFORMANCE INDICATORS:

Performance Indicators will reflect on the project deliverables and will be established in consultation with the Principal Investigator and/or the Head of Department/School as part of the post-holder's annual Appraisal and Professional Development Review.

KEY RELATIONSHIPS (Internal & External):

- CMRG team members.
- Project partners – the project team at the University of Nottingham.
- Stakeholders – companies supporting the project.
- Funder – EPSRC.

PERSON SPECIFICATION	
Essential	Desirable
<p>Experience</p> <ul style="list-style-type: none"> • Independent subject specific research. • Publication of original work at the level of national and international excellence. • Contribution to research and/or enterprise activities and/or projects. • Dissemination of research and/or enterprise findings at national and international conferences or symposia • Engagement with national or regional public/business/industry/professional bodies in respect of research • Collaborative work <p>Skills</p> <ul style="list-style-type: none"> • Specialist research skills and knowledge appropriate to the appointment. With a reference to the position, these include: <ul style="list-style-type: none"> ○ Mathematical background/numerical methods and/or computational mechanics ○ Physics-based modelling and analysis, for example using finite element (FE) analysis and simulation (mechanical, thermo-mechanical) ○ FE simulation software (e.g. ANSYS) ○ Scientific computing programming environment (e.g. MATLAB) • Ability to work both independently and (where appropriate) as part of a team. • Effective communication skills (including external audiences) 	<p>Experience</p> <ul style="list-style-type: none"> • Contribution to research administration at group or department/school level. • Some recognition of esteem by the academic community in the specific discipline. • Experience of supporting winning of external funding. • Contribution with specialist knowledge to the integration of research and/or enterprise into teaching or training programmes. <p>Skills</p> <ul style="list-style-type: none"> • Physics-of-failure/reliability modelling • Model order reduction techniques and approaches • Data-driven modelling/ machine learning • Material behaviour and material degradation/failure • Power electronics and/or microelectronics (IGBT modules, power cycling testing, environmental testing)

<ul style="list-style-type: none">• Outstanding organisational, IT communication and interpersonal skills <p>Qualifications</p> <ul style="list-style-type: none">• PhD in Engineering, Material Science or related field (e.g. mechanics, power electronics, microelectronics, engineering reliability, numerical modelling) <p>Personal attributes</p> <ul style="list-style-type: none">• We are looking for people who can help us deliver the values of the University of Greenwich: Inclusive, Collaborative and Impactful	<p>Qualifications</p> <ul style="list-style-type: none">• N/A <p>Personal attributes</p> <ul style="list-style-type: none">• N/A
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