



Engineering and
Physical Sciences
Research Council

Quick Reference

Please note that you must read this full Call document for guidance before submitting your expression of interest

Engineering New Quantum Devices Workshop - a Community Engagement Workshop

Call type: Expression of Interest

Closing date: 4th April 2022 16:00

How to apply: Expressions of Interest to be submitted via a Smart Survey form [here](#). All Expressions of Interest will be assessed by an EPSRC internal panel and in the event of oversubscription an appropriate number of participants will be selected to attend. Applicants will be asked to express an interest as to which date they would prefer to attend. Outputs will be collated from the workshop and key findings will be disseminated with attendees.

Key Dates:

Activity	Date
Expression of Interest opens	Monday 7th March 2022
Deadline for submission of Expression of Interest	Monday 4th April 2022 16:00
Successful applicants notified	Friday 8th April 2022
Date of workshops	Tuesday 10th May 2022 09:45-16:00
Other opportunities: Microsystems (Engineering) workshop (see page 8)	Wednesday 9th May

Contacts:

For general enquiries please contact the Engineering inbox in the first instance:
QuantumTechnologies@epsrc.ukri.org

Alternatively, please contact:

Adam Oliver – Portfolio Manager (Adam.oliver@epsrc.ukri.org)

Joseph Westwood – Senior Portfolio Manager (Joseph.Westwood@epsrc.ukri.org)



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Related EPSRC themes and research areas:

Systems Engineering	Superconductivity	Microelectronic device technology
Condensed Matter: Electronic Structure	Cold Atoms and Molecules	Microelectronics Design
Quantum Devices, Components and Systems	Manufacturing Technology	Condensed Matter: Magnetism and Magnetic Materials
Microelectronic Device Technology	Optical Devices and Subsystems	Optoelectronic Devices and Circuits
RF and Microwave Devices	Sensors & Instrumentation	Optical Communications
Quantum Optics and Information	Spintronics	Light matter interaction and optical phenomena

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Summary

Quantum Technologies research spans across a broad range of research disciplines and involves individuals and organisations with similarly broad interests and skillsets. The research can be both theoretical and experimental in nature but can also focus upon the development of a specialised device or component with a specific end use. The research

and development of devices and components often relies upon elements of both Physics and Engineering to achieve the research objectives.

The planned workshop aims to bring together individuals from both the quantum and engineering communities to explore the current state of research that utilises skills from across both disciplines, then reflect upon the future direction of the interface between quantum technologies and engineering. Particular consideration will be given to explore how best the EPSRC can support the community to deliver maximum impacts across the UK R&D landscape and enable economic, societal, and environmental benefits.

EPSRC will be holding a workshop in May 2022 with the aim of bringing the quantum technologies and engineering communities together. This workshop will explore and assess the current state of the research and industrial landscape at this interface between the Quantum Technologies and Engineering communities and highlight how best the community can be supported to deliver positive impact across various sectors and the UK R&D landscape.

The workshop will consist of:

- Keynote talks from community leaders and EPSRC.
- Facilitated discussion sessions around common challenges across the quantum technologies and engineering research ecosystem, and emerging fundamental and application-based research areas for engineering new quantum devices research.
- Networking opportunities.

We anticipate this event will be of interest to researchers working in both quantum technologies, and engineering fields with knowledge, experience, and interest in the interface between both sectors and particular focus towards application-based research areas for engineering new quantum devices research. Colleagues from industry and the third sector are also encouraged to apply in order to foster relationships between industrial needs and fundamental engineering new quantum devices research, as well as supporting EPSRC to ensure non-academic drivers are reflected in future priorities and scoping activities.

The event will be in an accessible format, offering opportunities to attend online or in-person in Manchester (venue to be confirmed).

Please note there is no funding associated with this activity.

Objectives

The overarching objectives of the workshops are:

- To assess the current state of the research and industrial landscape at the interface between the quantum technologies and engineering communities.
- To identify the key research challenges and stakeholders relevant to both the engineering and quantum technologies communities and the opportunities to explore at this interface.
- To consider the future direction the EPSRC's quantum technologies and engineering themes could take with strategies to best serve the interface between quantum and engineering.

- Provide an opportunity for quantum technologies and engineering researchers to network, to enhance community awareness of common goals and research challenges between two research communities.

To apply, please submit an Expression of Interest following the instructions in the call document linked below. Expressions of Interest will open at 9:00 on Monday 7th March and will close at 16:00 on Monday 4th April.

All Expressions of Interest will be assessed by an EPSRC internal panel and in the event of oversubscription an appropriate number of participants will be selected to attend. Successful applicants will be notified by Friday 8th of April.

Background

The quantum devices, components and systems research area encompasses the creation, control, and manipulation of quantum states to design systems with functionality that could not be achieved in a non-quantum world. This goes beyond exploiting the behaviour of inherent quantum effects which deliver fundamental device characteristics – for example, as in superconductors and lasers – to deliver non-classical system performance.

Reflecting the ambitions of the [National Quantum Technologies Programme's Strategic Intent](#), we will maintain a strong portfolio of investments in research, high level skills, capital, and academic-industry partnerships to build the UK's strength and capabilities in these emerging technologies. Research should continue to progress into the development and exploitation of technologies across a range of application areas. A critical mass of research and training capabilities is needed to generate new ideas and concepts to address the long-term challenges associated with developing and deploying quantum technologies for varied applications.

As part of the ongoing strides taken by the UK towards achieving the ambitions of NQTP ¹ strategic intent the EPSRC is dedicated to community engagement and seeking expert input for the challenges faced by the research community. The NQTP Strategic Intent recognises that there is a growing need for interdisciplinary collaboration, bringing together the physical sciences with engineering, mathematics, and computing disciplines to enable products to be developed that will meet the needs of industry within Quantum Technologies. Therefore, EPSRC intends to hold a workshop which aims to bring together key stakeholders from across both quantum technologies and engineering disciplines to discuss the challenges at the interface of both sectors, whilst also providing a platform to strengthen the research community.

Who can apply

We anticipate this event will be of interest to researchers working at the cutting edge of research, between both quantum technologies and engineering which looks to integrate, develop, and engineer new quantum devices (with particular applications in mind). Colleagues from industry and the third sector are also encouraged to apply in order to foster relationships between industrial needs and fundamental research, as well as supporting EPSRC to ensure non-academic drivers are reflected in future priorities and scoping activities.

The event will be in an accessible format, offering opportunities to attend online or in-person in Manchester (venue to be confirmed).

¹ National Quantum Technologies Programme

We are committed to a policy of equal opportunities, and encourage applications from women, those with a disability, members of ethnic minority groups, and other groups who are currently under-represented at EPSRC's events.

Support will also be available to cover caring responsibilities in addition to normal care arrangements. Further details are available [here](#). If you have any questions, please contact the organisers.

How to apply

EPSRC are looking to select approximately 40 attendees, with a diverse range of expertise and experience in research and innovation from across all of EPSRC's stakeholder groups. The workshop will include an appropriate balance of expertise from different organisations as well as reflecting a diverse mix of individuals and backgrounds.

Expressions of Interest should be made via the Smart Survey form [here](#), before Monday 4th of April 16:00.

There are six parts to the application, which are detailed below:

Applicant details: Basic information and contact details, including title, name, current position, organisation, and email address.

Area of knowledge and experience: Please outline your current research area, as well as your prior experience.

Please also identify which group you most closely align with within the interface between quantum technologies and field of engineering new quantum devices. If you associate with more than one, please indicate a preference order based on most relevant (note that some fields overlap with one another):

- Nanofabrication
- MEMS (Micro-Electro-Mechanical Systems)
- Photonic Circuits
- Optoelectronics, Optical Devices and Subsystems
- RF and Microwave Devices
- Sensors & Instrumentation
- Quantum Devices, Components and Systems
- Integration of Quantum Devices with classical architecture and systems, including packaging
- Microelectronic Device Technology
- Systems Engineering
- Microelectronic Device Technology
- Other (please state):

Assess and understand the current state of the research and industrial landscape at the interface between the QT and Engineering communities:

Please answer the following questions about your perception and experience of the current "state of play" of the interface between quantum technologies and engineering research landscapes with a view to developing new quantum devices. Responses will remain anonymous but may be used to inform the discussion sessions at the workshop.

1. Please provide a brief evaluation of the level of collaboration across the quantum technologies and engineering (both research and industry) communities (in no more than 100 words).
2. Evaluate the appropriateness of training and support for researchers to acquire transferable skills across multiple disciplines between engineering and quantum technology research communities (in no more than 100 words).
3. Please describe in brief a (present or future) research activity that excites you within the remit of quantum technologies (in no more than 100 words).
4. Please describe what you believe is the most important priority/priorities facing the research community over the next 5 years in relation to engineering new quantum devices (in no more than 100 words).
5. Please provide a brief account of the potential benefits that might occur through greater interactions and agility of research occurring at the interface between both quantum and engineering sectors (in no more than 100 words).
6. Please indicate if you would be interested and anticipate attending the Microsystems workshop, brief description stated below, further details can be found using link provided on page 7 of this document:

"The Engineering theme at EPSRC will be running a separate workshop event on the 9th of May "Microscale Systems, Sensors & Devices and Machines". to explore the current state of microsystems research, future directions of microsystems engineering, and how best the community can be supported to deliver positive impact across various sectors and the UK R&D landscape."

Workshop content: Why is this event of interest to you and what contribution are you hoping to make? How will you disseminate the information discussed to your own network/community?

Additional content: Are there any questions / topics you would like the engineering new quantum devices workshop to address?

Attendance: Please confirm whether you would prefer to attend in-person or online. The in-person event will be held in Manchester (venue TBC). We highly encourage in-person attendance at this event to best utilise the networking opportunities; however please note that attendance preferences will not inform the assessment process detailed below. We will try and create appropriate mechanisms for networking for those attending on-line, as well as those in-person.

Equal Opportunities information

EPSRC operates a policy of equality and fair treatment. All applications will be treated fairly, regardless of gender, age, ethnic origin, or disability. To help us achieve this aim the

information from this section helps us to monitor the effectiveness of our policy. Individuals are asked to supply equal opportunities information which will not be used to determine an applicant's fit to the essential criteria but will be used to consider a balance of gender and other protected characteristics across the workshop, after the initial sift.

Applications will be assessed solely on the information provided in the application, with the focus of the assessment on the answers to the questions provided.

In accordance with the General Data Protection Regulation 2016/679 (EU) (GDPR), the personal information provided on this form will specifically be used for the purpose of administering this form and aggregated anonymised data will be used for the purposes of monitoring our advisory and decision-making bodies. Analysis of the information will be viewed by EPSRC staff only and personal information will not be used for any other purpose without your specific consent.

For further information on how your information will be used, how we maintain the security of your information, and your rights to access information we hold on you, please contact the UK Research and Innovation Information Rights Team.

Assessment

Assessment process:

All Expressions of Interest (EOI) will be assessed by an internal EPSRC panel against the selection criteria.

Selection criteria:

The Expressions of Interest will be used to select participants based on the responses to the assessment questions in the 'How to apply' section, and to ensure as broad a representation of the community as possible, including organisation, research area and prior experience. Places are limited; in the event of over-subscription, an appropriate number will be selected to attend, and prioritisation will be based on the essential selection criteria below.

1. Relevance of expertise and/or future research aspirations to the scope of the workshop.
2. Potential to contribute to and gain from the workshop.
3. **Out of applications meeting the essential criteria (criteria 1 and 2)**, steps will be taken to ensure diversity of membership from across EPSRC's stakeholder groups, with a balance of expertise and institutional representation, and a consideration of gender and ethnicity balance.

Following the EOI process, EPSRC reserve the right to invite attendees to join the workshop, to ensure the balance of membership is appropriate. EPSRC's decision on attendance is final and feedback will not be given to unsuccessful applicants.

Additional Details

The Engineering theme at EPSRC will be running a separate workshop event on the 9th of May "Microscale Systems, Sensors & Devices and Machines". to explore the current state of microsystems research, future directions of microsystems engineering, and how best the community can be supported to deliver positive impact across various sectors and the UK R&D landscape.

The workshop will be held at the same venue in Manchester (venue TBC).

Further details can be found [here](#).

Next Steps

Following both the microsystems and quantum technologies workshops taking place, the outputs will be collated from the workshop and key findings will be disseminated with attendees in a concise report. Based on the findings of the workshop and report the EPSRC will consider the research challenges and potential strategic and funding interventions.

Related Content

- [Equality Impact Assessment](#)
- [Equality, Diversity and Inclusion](#)

Change log

Name	Date	Version	Change
Adam Oliver	28/02/2022	2	N/A