

Quick Reference

Please note that you must read the full Call document for guidance before submitting your proposal

Quantum Technologies Innovation Chairs Call

Call type: Expression of interest

Closing date: 16:00 12 October 2016

Funding Available: £10 million of recurrent funding is available to support **four to five** Innovation Chairs over a four year period starting on 01 April 2017.

How to apply: Multiple stage submission process via Expression of Interest (EoI) and full proposal

Assessment Process: EoI's will be considered for remit and fit to the scope of the call by EPSRC. A subset of the National Programme Strategic Advisory Board (SAB) will also review the EoI's in a mentoring capacity and may contact candidates to give feedback ahead of the full proposal stage. Full proposals will be invited if in remit and scope of the call. Full proposals will be submitted by the UK host organisation working closely with the candidate and considered by an expert shortlisting panel. The shortlisted individuals will then be invited to interview.

Key Dates:

Activity	Date
Deadline for Expression of Interest	16:00 on 12 October 2016
Invitations to submit Full Proposal issued by	26 October 2016
Deadline for Full Proposal submission	16:00 on 08 December 2016
Full proposal Shortlisting panel	02 February 2017
Full proposal Interview panel	01 and 02 March 2017
Funding decision	08 March 2017

Additional information:

Host organisations will be responsible for writing and submitting the full proposal through Je-S, however this should be written working closely with the candidate. Host organisations will be expected to provide a statement of support. This should lay out their contribution, including the provisions they will make to the candidate so that they can establish themselves as an academic within their organisation. It will also need to state how the appointment of this chair fits within the host organisations strategy.

Contact:

Amanda Howes, Portfolio Manager – Quantum Technologies Theme
(amanda.howes@epsrc.ac.uk)



Quantum Technologies Innovation Chairs Call

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Related themes: Quantum technologies.

Summary

The National Quantum Technology Programme wishes to bolster the UK's existing capabilities in the innovation space by recruiting internationally recognised researchers to UK academic positions focused on innovation in this emerging technology.

EPSRC, with the support of Innovate UK and the Royal Academy of Engineering, are inviting Expressions of Interest (EoI) from individuals, and their proposed UK host organisations, that will contribute to the expansion of the UK's quantum technologies capability through their specific focus on innovation.

EPSRC has £10 million of funding available for this call to support **four to five** Innovation Chairs over a four year period starting on 01 April 2017.

The EoI's will be considered for remit and fit to the scope of the call by EPSRC. A subset of the National Programme Strategic Advisory Board (SAB) will also review the EoI's in a mentoring capacity and may contact candidates to give feedback and guidance ahead of the full proposal stage. Full proposals will be invited from those that are in remit and fit the scope of the call.

Full proposals will be written and submitted by the UK host organisation working closely with the candidate. The full proposals will be considered by an expert shortlisting panel and the shortlisted candidates will then be invited to interview.

Background

The diverse range of quantum technologies that are currently under development will enable the creation, control and manipulation of sensitive and fragile quantum effects within single systems. This provides powerful and useful effects that are not possible with current electronics or materials based systems. The new components, devices and systems resulting from these technologies offer enormous potential to build new products, services, processes and industries that will enhance the quality of life of citizens and generate employment and wealth.

In recognition of this opportunity, and the UK's vibrant and internationally competitive research base, the government announced a £270 million investment in its 2013 Autumn Statement to establish the UK National Quantum Technology Programme. This is a collaborative effort between the Department for Business, Energy & Industrial Strategy (BEIS), EPSRC, Innovate UK and the National Physical Laboratory (NPL), in partnership with the Defence Science and Technology Laboratory (Dstl) and the Government Communications Headquarters (GCHQ).

The UK National Quantum Technology Programme has already had a significant impact on the UK's quantum technologies landscape through a range of investments. Notable developments include EPSRC's establishment of a national network of Quantum Technology Hubs, together with its investment in Centres for Doctoral Training (CDTs) and Training and Skills Hubs, and initiatives by Innovate UK to enable businesses to explore commercial opportunities that quantum technologies may bring to the UK.

This call has the potential to contribute to all of the aims of the UK's National Quantum Technology strategy, by bolstering the UK's existing capabilities in the innovation space by recruiting internationally recognised researchers to UK academic positions focused on innovation in this emerging technology.

The key objective of this call is for the Innovation Chairs to deliver a programme of high quality research that addresses innovation challenges facing quantum technologies in the UK. This research must complement and bolster the existing investments made as part of the National Programme by delivering enhancements or acceleration to the innovation process.

Further information about the National Programme can be found on the UK National Quantum Technologies website at <http://uknqt.epsrc.ac.uk/>. A copy of the National Quantum Technologies Strategy and the National Quantum Technologies Roadmap can also be found on the website at <http://uknqt.epsrc.ac.uk/resources/publications/>

Scope of Call

Applicants for the Innovation Chairs will be required to demonstrate how they meet the technical scope of the call, the person specifications and the expectations of the Innovation Chairs. Details of each of these are provided below:

Technical Scope

This call will bolster the existing capabilities within the UK National Quantum Technologies Programme by complementing the key investments made by partners in the National Programme, including the network of technology hubs funded by EPSRC, and the innovation funding through Innovate UK's feasibility and Collaborative Research and Development calls.

The research and capability enabled by these Innovation Chairs must focus on innovation in the UK in quantum technologies.

Quantum technologies are those that involve the creation, control and manipulation of sensitive and fragile quantum effects within single systems. Although many current and future technologies are described by quantum

theory, the focus of this call is on expanding capabilities focussed on the direct exploitation of quantum phenomena such as superposition or entanglement to enable disruptive impacts in security, communications, computing, simulation, precision, sensitivity, accuracy or speed of sensing.

Applicants to this call should focus on research aimed at the creation of commercially exploitable knowledge and capabilities in areas of UK strength in order to accelerate and enhance innovation of quantum technologies in the UK. In so doing they should articulate how their research will complement the Programme's existing investments and contribute to the development of this emerging technology in the UK.

Person Specification

Candidates will be required to demonstrate the following:

- Experience of industrially relevant research which goes beyond research collaboration, this could include contract research, consultancy or employment history.
- The added value that their experience will bring to the UK quantum technologies landscape and how they will work with the existing National Programme investments to accelerate impact and generate growth.
- Knowledge of routes to market, supply chains and an appreciation of the commercialisation process.
- The ability to:
 - articulate their vision and utilise their industrial experience to accelerate or enhance the innovation of quantum technologies in the UK.
 - identify and pursue the best and most appropriate opportunities to accelerate the commercialisation of quantum technologies.
 - utilise their leadership skills to deliver high quality research that accelerates the innovation of quantum technologies in the UK and act as role models to inspire the UK quantum technologies research community to innovate.
 - engage, negotiate, influence and communicate with both academic and non-academic audiences and to facilitate academics and non-academics communicating and working together as required to help deliver their vision effectively.
 - respond to the changing quantum technologies landscape, by refreshing their research agenda and evolving their partnerships in line with developments in the field.

Expectations of the Innovation Chairs

- The key objective of this call is for each of the Innovation Chairs to deliver a programme of high quality research that addresses the innovation challenges facing quantum technologies in the UK. This research must

complement and boost the existing investments made as part of the National Programme, delivering enhancements or an acceleration of the innovation process.

- Bolster capability in the UK's innovation community, enabling the UK to play a leading international role in the development of quantum technologies and accelerate the innovation process of current and future investments. To deliver this, EPSRC are looking for the cohort of Innovation Chairs to provide breadth across the range of quantum technology areas in line with existing investments.
- Work as a cohort of Innovation Chairs; together with other National Programme investments; EPSRC and the other National Programme partners who are working in partnership to deliver the vision outlined in the National Strategy for Quantum Technologies "to create a coherent government, industry and academic quantum technology community that gives the UK a world-leading position in the emerging multi-billion-pound new quantum technology markets, and to substantially enhance the value of some of the biggest UK-based industries."
- Play an active role in National Programme activities, including feeding into the strategic direction of the Programme. This will require engaging with National Programme partners and investments, and mentors will be provided to the Innovation Chairs to help make these connections.
- Help to establish a critical mass of technology development and industrial engagement activities, helping to catalyse wider community activity.

Funding available

EPSRC has £10M of funding available for this call to support **four to five** Innovation Chairs over a four year period starting on 01 April 2017.

Through a combination of EPSRC funding and institutional support, it is expected that the candidate will request a package of resources appropriate to the aims of the proposal.

Please note the following:

- EPSRC will provide funds for up to 50% of the candidates time on the grant, the remaining cost must be covered by the host organisation as part of their package of support.
- EPSRC funding is available for this call in line with standard eligible recurrent costs for research proposals. Eligible costs include staff time, travel and subsistence and access to equipment, further details on eligible costs can be found at <https://www.epsrc.ac.uk/funding/howtoapply/fundingguide/>.
- Capital items cannot be funded through this call. This therefore excludes all items of equipment that are £10,000 or more or any combination of items that will form one capital asset which have a combined value of £10,000.

- Relocation costs of the applicant cannot be claimed through this grant; it is the expectation of EPSRC that these are covered by the Indirect and Estates costs of the grant or as part of the institutional package.
- Relocation costs for other staff named on the grant can be claimed provided that the costs and the role of the staff are clearly justified.
- The grant has a fixed start date of 01 April 2017, however due to the nature of this call and the funding decision timeline; the successful candidates will only have until 01 July 2017 to be in post.

Further information of specific relevance to this call

- At the EoI stage, only EPSRC and John Bagshaw and Peter Dobson, members of the National Programme's Strategic Advisory Board (SAB) will see the EoI's. The questions on the EoI will focus on the strategy behind the application; the in-depth details of a potential move do not need to be provided until the full proposal is submitted.
- Details of the documentation required to support the full proposal will be provided to the host organisation as part of the guidance document once an invitation to submit the full proposal has been issued.
- Although the full proposal will be submitted by the University in the name of the Pro Vice Chancellor or equivalent, the grant will be awarded to the successful candidate.
- For those candidates invited to attend an interview, EPSRC will pay for reasonable travel and subsistence costs to attend the interview in line with RCUK's travel policy which can be found at <http://www.rcuk.ac.uk/documents/terms/travelsubsistenceandexpensespolicy-pdf/>
- Successful candidates will be given a mentor outside of their host organisation by EPSRC to help connect them to the UK National Quantum Technologies Programme. Where possible this will be a member of the National Programme's Strategic Advisory Board (SAB).
- There are a number of academics involved in the National Quantum Technologies Programme in the UK that have made the transition to UK academia from overseas academia/industry or from UK industry. If you would like the opportunity to discuss experiences of transitioning to UK academia the following people would be willing to hear from potential candidates:

Name: Professor Myungshik Kim

UK University: Imperial College London

Link to the National Programme: Director of both the EPSRC Centre for Doctoral Training in Controlled Quantum Dynamics and the Training and Skills Hub in Quantum Systems Engineering; Imperial Centre for Quantum Engineering and Science.

Member of the UK National Quantum Technologies Strategic Advisory Board

Details of transition to UK academia: Prior to joining Imperial College, Professor Kim has been at various places including Sogang University, Essex University, Max-Planck Institute for Quantum Optics and Queen's University Belfast.

Email address: m.kim@imperial.ac.uk

Name: Professor Kai Bongs

UK University: University of Birmingham

Link to the National Programme: Director of the UK National Quantum Technology Hub in Sensors and Metrology

Details of transition to UK academia: Coming from the University of Hamburg, I was appointed as chair at the University of Birmingham in 2007.

Email address: k.bongs@bham.ac.uk

Name: Professor John Rarity

UK University: University of Bristol

Link to the National Programme: EPSRC Established Career Quantum Technologies Fellowship

Details of transition to UK academia: Came to UK academia from QinetiQ, a British multinational defence technology company

Email address: John.Rarity@bristol.ac.uk

Name: Professor Winfried Hensinger

UK University: University of Sussex

Link to the National Programme: Investigator in the UK Quantum Technology Hub on Networked Quantum Technologies and the UK Quantum Technology Hub for Sensors and Metrology.

Details of transition to UK academia: Completed PhD in Australia, worked as Research Fellow in the USA, then moved to academia in the UK

Email address: w.k.hensinger@sussex.ac.uk

Name: Dr Chris Ervin

UK University: Centre for Quantum Photonics – University of Bristol

Link to the National Programme: Co-PI on the Quantum Communications Hub, Lecturer with the Quantum Engineering CDT, Co-Director of the Quantum Technology Enterprise Centre.

Details of transition to UK academia: I transitioned to the University of Bristol as a postdoc in April 2013 after completing my MSc, PhD, and a short one-year postdoc at the Institute for Quantum Computing at the University of Waterloo in Ontario, Canada. Shortly after arriving, I had the good fortune to

help write Bristol's portion of the successful QComms Hub bid and to join the QE-CDT as a Lecturer. Recently, I helped to write the successful QTEC bid which we are in the process of setting up. Over the last three years I have come to know UK academia and the quantum technology programme quite well and would be more than happy to answer questions and provide advice for academics/industry considering moving to the UK.

Email address: Chris.Erven@bristol.ac.uk

Eligibility

For information on the eligibility of organisations and individuals to receive EPSRC funding, see the EPSRC Funding Guide:

<https://www.epsrc.ac.uk/funding/howtoapply/fundingguide/>

As this call is a targeted funding opportunity provided by EPSRC, higher education institutions, and some research council institutes and independent research organisations are eligible to apply. A list of eligible organisations to apply to EPSRC is provided at: <http://www.rcuk.ac.uk/funding/eligibilityforrcs/>

How to apply

Submitting an application

The Expression of Interest (EoI) must be submitted using the online form available via the call page at the EPSRC website (<https://www.epsrc.ac.uk/funding/calls/innovationchairs/>). The form includes questions to be answered by the candidate and the host organisation. Only one EoI should be submitted containing the answers from both parties. The EoI must have contact details for the candidate and a nominated contact from the host organisation. The deadline for submission is 16:00 on 12 October 2016.

Full proposals will be invited from those that are in remit and fit the scope of the call. Full proposals will be written and submitted in the name of the Pro Vice Chancellor or equivalent by the UK host organisation working closely with the candidate. An invitation to submit a full proposal will be sent by email to the candidate and host organisation. At this point both must confirm by return of email that they wish to continue to the full proposal stage. Once confirmation is received, guidance on the full proposal requirements including documentation to include and the selections required in Je-S to submit the proposal will be sent to the host organisation contact by email.

At the point that the awards are being made, EPSRC will make the necessary changes to ensure that the successful candidate becomes the Principle Investigator on the grant.

User Engagement Strategy

Successful candidates will be required to develop and execute a strategy for engaging with potential users of relevance to the quantum technologies that are the focus of the research funded in the project (resources for this activity can be requested as part of the Pathways to Impact and must be justified in the application). This strategy should be reviewed and updated regularly.

The strategy should cover:

- how and when potential users have been / will be identified;
- what form the engagement will take;
- what steps will be taken to ensure that outputs of the research are made available to potential users;
- suitable metrics for determining the success of the strategy in delivering value to users.

Assessment

Assessment process

Expressions of Interest (EoI's) will be considered for remit and fit to the scope of the call by EPSRC. A subset of the National Programme Strategic Advisory Board (SAB) will also review the EoI's in a mentoring capacity and may contact candidates to give feedback and guidance ahead of the full proposal stage. Full proposals will be invited from those that are in remit and fit the scope of the call. Full proposals will be submitted by the UK host organisation working closely with the candidate and considered by an expert shortlisting panel. The shortlisted individuals will then be invited to interview with an expert panel.

Please note that there is no postal review stage for this call.

EPSRC reserve the right to apply additional selection criteria at the expression of interest stage in the event of the call being so substantially oversubscribed as to be unmanageable as initially planned.

Assessment criteria

Expression of Interest stage

Expressions of interest will be assessed on remit and the fit to scope of the call by EPSRC.

Full proposal stage

The following assessment criteria will be applied to the full Proposals at both the sift and interview panel stages:

- Vision and Ambition
 - Demonstration of an ambitious vision to deliver high quality research outputs that address innovation challenges facing quantum technologies in the UK and
 - Clarity on how their vision and the proposed research will meet the expectations on the Innovation Chairs as detailed in the scope of the call.
- Quality of research, including:
 - The scientific merit, technical feasibility and industrial relevance of the proposed programme of research.

- Demonstration of how the proposed research meets the technical scope of the call.
- How the proposed research will bolster and complement the existing investments made as part of the National Programme delivering enhancements or acceleration to the innovation process.
- The candidate
 - How the candidate fits the person specification detailed in the scope of the call including the appropriateness of their track record and industrial experience.
 - Ability of the candidate to deliver the proposed research.
- Research and innovation Environment
 - Level of support from the host organisation and commitment to the career of the candidate.
 - How the candidate will benefit the department; how their experiences, management practices, contacts and knowledge complement / enhance the research strategy of the host institution.
 - Appropriateness of the host institution's plans to integrate the candidate into the department and host institution.
- Resources and management
 - Demonstration of a clear management plan which will ensure that resources, including workforce, are deployed in the most effective way to deliver high quality research outputs that address innovation challenges facing quantum technologies in the UK.
 - Appropriateness and justification of resources requested and the overall support package provided by EPSRC and the host organisation.
- National Importance
 - How the proposed research and capability being introduced to the UK will contribute to the UK National Quantum Technologies landscape.
- Impact
 - Who may benefit from the research, how they may benefit and what will be done to ensure they have the opportunity to benefit.
 - Appropriateness of plans detailed in the Pathways to Impact to maximise and accelerate innovation in quantum technologies in the UK, and how well these plans deliver against the scope of the call.

Feedback

Feedback will not be provided at the EoI stage, unless the SAB mentors specifically identify something in their mentoring role.

Written feedback will be provided from both the full proposal sift panel and the full proposal interview panel.

Guidance

Guidance for full proposals

Guidance will be issued to the host organisation following an invitation to submit the full proposal. This will contain details of the supporting documentation required and any other information of relevance to the full proposal stage.

Sift and Interview panels assessing the full proposals will also be given specific guidance based on the information in this call and the guidance document issued to those invited to interview.

Additional grant conditions

In addition to the standard terms and conditions for grants, additional grant conditions will be added to this grant covering the following:

The award will have a fixed start date of 01 April 2017, however due to the nature of this call and the funding decision timeline, the successful candidates will have until 01 July 2017 to be in post.

Holders of a Quantum Technologies Innovation Chair will be expected to engage with the National Quantum Technologies Programme. This includes interaction with the wider suite of investments made by the Programme, contribution to the development of the Programme strategy, and efforts to demonstrate its progress to industry, government and the public.

Abidance to the publicity/branding guidelines of EPSRC and the UK National Quantum Technologies Programme.

Key dates

Activity	Date
Deadline for Expression of Interest	16:00 on 12 October 2016
Invitations to submit Full Proposal issued by	26 October 2016
Deadline for Full Proposal submission	16:00 on 08 December 2016
Full proposal Shortlisting panel	02 February 2017
Full proposal Interview panel	01 and 02 March 2017
Funding decision	08 March 2017

Grant fixed start date	01 April 2017
Date Applicant must be in post by	01 July 2017

Call contact

Amanda Howes
Portfolio Manager, Quantum Technologies Theme, EPSRC
Amanda.howes@epsrc.ac.uk
01793 444447

Change log

Name	Date	Version	Change
Amanda Howes	22 August 2016	1	N/A
Amanda Howes	9 September 2016	2	Addition of Royal Academy of Engineering support of the call including logo