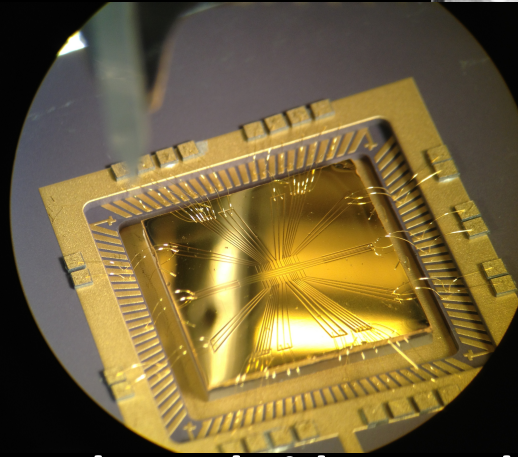
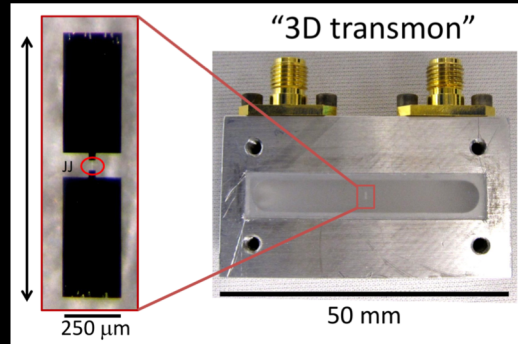
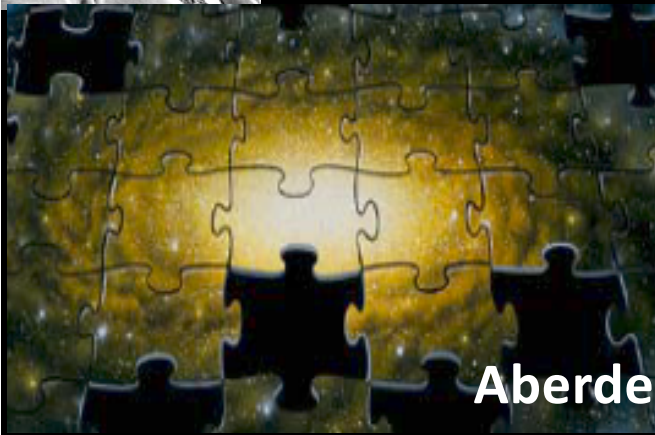
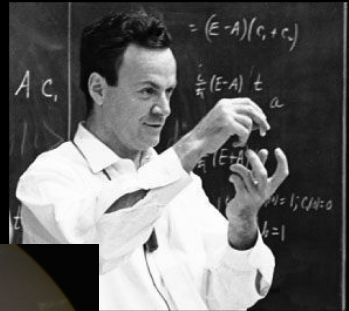




Quantum Sensors for Fundamental Physics

>200 EPSRC and STFC Scientists
31 institutes & 5 partners



Aberdeen Birmingham Bristol Brunel Cambridge Cardiff
Durham Edinburgh Glasgow Imperial KCL Lancaster Liverpool
Manchester Nottingham Open Oxford Plymouth QMUL QUB
RAL RHUL Sheffield Soton Strathclyde Sussex Swansea UCL

Partners:



QSEP 2 January 2019-- I. Shipsey



Quantum Sensors for Fundamental Physics Workshop October 2018 Oxford
>140 from EPSRC & STFC in attendance

Quantum Sensors for Fundamental Physics

Why is this good for all the partners?

The exciting science will benefit all the partners involved: universities, labs & hubs

Leverage the current Hubs to bring state of the art sensors to this new application.

There will likely be a tension between performance and “manufacturability” but the Phase II Hubs should be able to deliver research to push performance, and additional support for user communities from STFC that could feed into and benefit from the Hubs activity

Why is this good match to the SPF?

This is a genuinely new *interdisciplinary* partnership between STFC EPSRC and other partners - so plays well to the UKRI era.

Quantum Sensors for Fundamental Physics and Society- Workshop #1

The workshop had four goals

#1 To survey the extraordinary science opportunities and UK capabilities to exploit this science in a world-class programme

#2 To demonstrate to STFC, EPSRC and UKRI the immense interest in the UK in QSFP

#3 To begin to form teams around key experiments that would be funded by QSFP

#4 To work with STFC and EPSRC on the QSFP bid..



Quantum Sensors for Fundamental Physics, St. Catherine's College, Oxford, UK

16 October - 17 October 2018
Oxford, UK

Quantum Sensors for Fundamental Physics - Next Steps


The submission into SPF wave 2 was made by STFC/EPSRC December 20. This requests the funding to create the QSFP programme (£40M/ 3 years)

Feedback: The QSFP consortium has been essential to demonstrating the interdisciplinary interest & formation of a community . Without it there would have been no bid to SPF.

If the SPF bid is successful (panel has met) we will be informed (month,2019) an open call will be made to the community ~ month+1, 2019 with a deadline of ~Month +(3 or 4) 2019

QSFP Opportunities Funding from STFC was awarded to build a community and consortium to prepare for the call. We will support workshops that facilitate the formation of teams and the development of proposals around key experiments that would be funded by QSFP.

We will also appoint a International Review Board of world-leading experts from outside the UK that will review the proposals providing crucial feedback to strengthen them



First AION Workshop at Imperial College London March 25/26 2019



Organised by:
T. Bowcock,
O. Buchmueller [Coord.],
J. Coleman,
J. Ellis [Theory],
I. Shipsey

2-Day Workshop:
Day 1: Instrumentation
Day 2: Physics case

**If you like to participate or
require further information
please contact:**

**fundamental-physics-admin@imperial.ac.uk
with "AION" in title.**



Workpage Summary

1. Hidden Sector Facility
2. Macroscopic Superposition
3. *AION*
4. Neutrino Mass
5. Simulators
6. Networked Sensors
7. 5th Force & Dark Matter
8. Exotic Atoms
9. Lorentz Invariance



Quantum Sensors for Fundamental Physics - Next Steps

17 January 2019 consortium meeting to hear presentations from each workpackage, cross-fertilise, give feedback, merge if required, last chance of any late-breaking new ideas



Quantum Sensors for Fundamental Physics, St. Catherine's College,
Oxford, UK - workshop 2

#1 Update on funding:

As of Feb 26 the situation as described by Mark Thomson (Executive Chair STFC) is:

"In the event that QSFP were recommended for funding, there are other steps, potentially including BEIS clearance of the recommended SPF programme. This means that the timeline for announcement of the outcomes of the SPF bids is not completely clear."

Updates since have been unchanged, then on March 18:

"You should hear something shortly. Either way, we are likely to have to wait for ministerial clearance before any announcement."

Note added by us as a guide: if the announcement came at the end of March, the open call may be made in April and the deadline to submit proposals would be 2 -3 months later so June or July. Clearly this is only speculation on our part at this stage.

Quantum Sensors for Fundamental Physics - Next Steps (assumes call late April/early May)

End April 2018 Draft workpackages due for review by IRB

End May 2018 Final workpackages due for review by IRB, formal costings initiated

We don't yet know the terms of the funding call, it is possible the value of individual proposals may be capped. In that event work packages would go into the bid as standalone proposals

If there is no cap, we have the option to submit as a consortium.

In which case a group of volunteers will be charged with developing wider aspects of proposal including metadata & coordinating with STFC/EPSRC towards submission

Either way 2nd week of June consortium meeting to review/sign off the proposal(s)

Late June proposal(s) submission

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Either way 2nd week of June consortium meeting to review/sign off the proposal(s)

Late June proposal(s) submission

From: Ian Shipsey Ian.Shipsey@physics.ox.ac.uk
Subject: QSFP Funding Update/webpage/school/governance & telecon Wednesday April 3 at 1500
Date: March 24, 2019 at 12:41 AM
To: Stafford Withington stafford@mrao.cam.ac.uk, Gavin Morley gavin.morley@warwick.ac.uk, Sougato Bose s.bose@ucl.ac.uk, Buchmueller, Oliver L o.buchmueller@imperial.ac.uk, Coleman, Jonathon J.[Coleman@liverpool.ac.uk](mailto:Jonathon.Coleman@liverpool.ac.uk), Armin Reichold armin.reichold@physics.ox.ac.uk, Silke Weinfurtner silke.weinfurtner@nottingham.ac.uk, Peiris, Hiranya h.peiris@ucl.ac.uk, Pontzen, Andrew a.pontzen@ucl.ac.uk, Giovanni Barontini G.Barontini@bham.ac.uk, JONES, MATTHEW P.A. m.p.a.jones@durham.ac.uk, BAUER, MARTIN M. martin.m.bauer@durham.ac.uk, Cassidy, David d.cassidy@ucl.ac.uk, Michael Charlton m.charlton@swansea.ac.uk, Patrick Gill patrick.gill@npl.co.uk
Cc: Ian Shipsey ian.shipsey@physics.ox.ac.uk, Saakyan, Ruben r.saakyan@ucl.ac.uk, Themis Bowcock Themis.Bowcock@liverpool.ac.uk, Edward Daw e.daw@sheffield.ac.uk, John March-Russell john.march-russell@physics.ox.ac.uk



Dear WP-leaders,

There will be a meeting of WP Leaders on Wednesday April 3 1500-1600 to discuss funding, the likely timeline of the call, web presence, a QSFP school, the International Review Board, and governance of QSFP. We recognize that no date and time are perfect. It is important however that each WP is represented at the telecon. If a WP leader is not able to be present, please ensure another member of the WP can attend instead.

#2 Towards a webpage for QSFP:

QSFP does not have a visible web presence. It would be useful for a variety of reasons to change this. The presence should be coherent. We will proceed to create one very simple home page with on the home page some general information about QSFP including the names of the work packages, the names of the work package leaders and coordinates of the WP leaders. (QSFP owns the domain qsfp-uk.org which we have the option to use for this.) The home page will feature links to nine pages one made by each work package. The work package pages would ideally reside at the same domain, however in the interest of simplicity and ease of maintenance each WP is asked to select an institute within the WP to host the WP page. The content of the WP page is to be decided by that work package. The advantage of this approach is that it puts web creativity in the hands of each WP, it shares the work of developing a web presence, and likely increases the amount of content QSFP will generate. The goal is to have each WP web page ready by Monday April 15. It is sufficient for it to be placeholder in the first instance. Please let us know if you cannot make this deadline (avoid "reply all").

#3 QSFP School

There have been many calls for a QSFP school from post docs and faculty across the consortium. It is an important community building and investment exercise for the long term. We agreed at the October 2018 QSFP meeting that we would do this. Due to the intense preparations that will be required for anticipated call for QSFP that will have a likely deadline of July, and given August is holiday month, September is the earliest we can realistically have the school. Accordingly, we have reserved St. Catz for the week of Monday September 23 - Friday September 27. We recognize that no date and no location is perfect. St Catz is including 150 en suite single bedrooms on the main quad at extremely attractive rates plus three meals a day. The Organizing Committee for the school will consist of one WP leader or designate from each WP and the coordinating group.

#4 Governance of QSFP

We propose the overall governance of QSFP going forward will consist of one WP leader or designate from each WP (currently 9 but more way form) plus the coordinating group.

Your input on the above is very welcome.
Thanks and looking forward to the telecon.

Ed, John, Ruben Themis, and Ian

Ed Daw
John March-Russell
Ruben Saakyan
Themis Bowcock
Ian Shipsey (coordinator)

International Review Board: WP leaders identified world-leading experts from outside the UK that to review the proposals providing crucial feedback to strengthen them. IRB being set up now.

Summary

In the US the QSFP interface area acts as a major attractor for creative, original young experimentalists and theorists. We believe this will be true in the UK as well. The programme will be world-leading, and highly complementary to the US programme and those of other nations

In this competitive area it is important to quickly develop the community that can launch the proposed programme. To do this expeditiously it will build on expertise, selected existing activities within the UK and exploitation of existing resources.

As the EPSRC, STFC and Space communities come together, and working with the quantum hubs, and NPL and US partners we anticipate entirely new and exciting science will emerge.