

## Research and Knowledge Exchange Committee

### First Report on School Research Activity for 2015/16

**(Please append to this report a listing of all applications for funding made since 4/6/2015)**

<b>School:</b>	MPS
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#### **Executive Summary<sup>1</sup>**

##### **Annual:**

The grant income for MPS for 2014/15 was a very healthy £5M, 52% up on the previous year (1.5% above target). Our contribution income was £1.6M, 77% of target. Awards in 2014/15 were £7.4M suggesting a continued upward trajectory.

Our targets for next year are £4.5M income and £1.5M contribution. I'd hope we exceed these. A highlight for next year will be a new senior appointment in Physics and Astronomy, intended to diversify our portfolio and enhancing our Impact potential.

Our main challenge in both departments is still Impact.

##### **Quarterly:**

It has been a busy summer for papers published in prestigious journals and other research achievements.

One notable award of a £1.5M Quantum Fellowship to Jose Verdu. Otherwise on paper it looks like it has been quite a quiet period for grant income in MPS since June. However, there are also two awards coming through totalling £1.4M that have not yet been finalised.

A summary of the grant applications seems no longer to be on this form. The applications attached since June 2015 total £15.2M, though there is an additional single bid of £7.5M submitted but not yet entered on system, so not in Dashboard. So the total applications is really £22.7M

The current application rate is very high e.g. our expectation is 30 proposals and £20M in applications in September. So, Tina Lehmbeck and RDO team have been worked very hard. This includes a particularly large set of 14 Royal Society URFs. Due to the change in RS deadline and historical precedent we did not have any pre-filtering on the applications. It is likely that the success rate on these fellowships will be low. Nevertheless this indicates that MPS has an attractive reputation.

There has been a big increase in journal papers reported on SRO rising from 22→97. This is the result of a big push from new HoD in mathematics and new support from Research Team in School Office.

#### **Part 1: summary of current activity<sup>2</sup>**

<b>Staffing</b>	<b>Number</b>	<b>FTE</b>
Academic staff	60	56.3
Research only	46	29.5

<b>Research students</b>	<b>THESE ARE NOT PRESENTED IN THIS WAY ON THE DASHBOARD</b>	<b>Number</b>	<b>FTE</b>
Funded		74	74

<sup>1</sup> To include: goals met / achieved; challenges faced; goals set for current academic year and plan of how these will be met; summary of any interdisciplinary initiatives and collaborations

<sup>2</sup> Snapshot figures as on the day the report from the research dashboard is run. Anticipated numbers should not be included.

Self-funding	THE NUMBERS I GIVE COME FROM	37	35
New	MY REC. AND COMPARE WITH 146	0	0
On continuation	ON DASHBOARD	13	N/A
Full-time		107	N/A
Part-time		4	N/A

## Part 2: Research output

		2015 (as reported on 4/6/15)	2015 to date
Peer-reviewed	DASHBOARD DOESN'T DISTINGUISH PEER REVIEWED FROM NON		0
	Authored book		
	Chapters	2	2
	Journal article	22	97
	Edited book		1
	Conference contribution		4
	Monograph		
	Other		
<b>Total</b>			
		<b>Number</b>	
Non peer-reviewed (where known)	Books		?
	Chapters		?
	Articles		?
	Book reviews		?
		<b>Number</b>	
Conferences hosted (June-Sep 2015)			3

## Part 3: Summary of performance in 2014/15

	Number	Total amount (£)
External funding grants (for previous financial year) <b>INCOME</b>	65	£5.022M
External consultations	2	£3k
		<b>Number</b>
Staff / research mentions in press (where known)		
Local		10
National		20
International		90

**Part 4: Activity since last Research & Knowledge Exchange meeting held 4 June 2015**

<p>Research related appointments:</p>	<table border="1"> <thead> <tr> <th data-bbox="352 255 603 376">Name</th> <th data-bbox="603 255 1273 376">Last Primary Job Title</th> <th data-bbox="1273 255 1417 376">Sussex Start Date</th> </tr> </thead> <tbody> <tr> <td data-bbox="352 376 603 416">Sharma, Arijit</td> <td data-bbox="603 376 1273 416">Postdoctoral Research Fellow</td> <td data-bbox="1273 376 1417 416">11/06/15</td> </tr> <tr> <td data-bbox="352 416 603 456">Gulati, Gurpreet</td> <td data-bbox="603 416 1273 456">Research Fellow in Experimental Networked Quantum IT</td> <td data-bbox="1273 416 1417 456">26/06/15</td> </tr> <tr> <td data-bbox="352 456 603 497">Cusseddu, Davide</td> <td data-bbox="603 456 1273 497">Marie Sklodowska-Curie Researcher</td> <td data-bbox="1273 456 1417 497">15/07/15</td> </tr> <tr> <td data-bbox="352 497 603 537">Bao, Hualong</td> <td data-bbox="603 497 1273 537">Research Fellow</td> <td data-bbox="1273 497 1417 537">12/08/15</td> </tr> <tr> <td data-bbox="352 537 603 577">Lekitsch, Bjorn</td> <td data-bbox="603 537 1273 577">Research Fellow</td> <td data-bbox="1273 537 1417 577">25/08/15</td> </tr> <tr> <td data-bbox="352 577 603 618">Sinclair, James</td> <td data-bbox="603 577 1273 618">Research Fellow</td> <td data-bbox="1273 577 1417 618">27/08/15</td> </tr> <tr> <td data-bbox="352 618 603 658">McCormick, David</td> <td data-bbox="603 618 1273 658">Research Fellow in Mathematics</td> <td data-bbox="1273 618 1417 658">01/09/15</td> </tr> <tr> <td data-bbox="352 658 603 698">Juma, Victor</td> <td data-bbox="603 658 1273 698"></td> <td data-bbox="1273 658 1417 698"></td> </tr> <tr> <td data-bbox="352 698 603 714">Ogesa</td> <td data-bbox="603 698 1273 714">Marie Sklodowska-Curie Researcher</td> <td data-bbox="1273 698 1417 714">10/09/15</td> </tr> </tbody> </table>	Name	Last Primary Job Title	Sussex Start Date	Sharma, Arijit	Postdoctoral Research Fellow	11/06/15	Gulati, Gurpreet	Research Fellow in Experimental Networked Quantum IT	26/06/15	Cusseddu, Davide	Marie Sklodowska-Curie Researcher	15/07/15	Bao, Hualong	Research Fellow	12/08/15	Lekitsch, Bjorn	Research Fellow	25/08/15	Sinclair, James	Research Fellow	27/08/15	McCormick, David	Research Fellow in Mathematics	01/09/15	Juma, Victor			Ogesa	Marie Sklodowska-Curie Researcher	10/09/15
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<p>Details of key research grants received (i.e. in top decile of all research grants received over last 3 academic years):</p>	<p>Dr. Jose Verdu was awarded a EPSRC Quantum Technology Fellowship “Quantum Microwave Sensors” £866k (Sussex value, total grant £1.5M)</p>																														
<p>Total (£):</p>	<p>£962k</p>																														
<p>Highlighted awards and recognitions:</p>	<p>See below.</p>																														
<p>Highlighted areas of Knowledge Exchange:</p>	<p>N.B. Both grant awards this period where in Knowledge Exchange.</p> <p>Dr Jose Verdu's Geonium Chip group secured a 5 year, £1.5m, EPSRC Fellowship (EP/N003675/1) to develop a quantum microwave sensor. The impact potential of the quantum microwave sensor is very large, although hard to quantify as it will likely be the first device in a entirely new industry segment that will emerge. Vital industry support was obtained and continues to be supported by our IPS fellow, Colin Hayhurst.</p> <p>Dr. Kathy Romer has been awarded an STFC Public Engagement Fellowship “The Dark Energy Survey: Education and Public Outreach” £96,301 funding some of her time from 1-Aug-2015 for 36 months. Kathy also took part in Soapbox Science (<a href="http://soapboxscience.org/">http://soapboxscience.org/</a>) in Newcastle in June and in London in August.</p> <p>Nano Pulser: Simon Peeter's group in EPP have developed over several years, for SNO+ and other experiments, a nano second LED pulser that is inexpensive and compact. A small STFC IAA project to assess the commercial feasibility of this nano pulser was funded this summer. The project has produced new IP and discovered a significant commercial opportunity. We are hopping to spin-out a company in 2017.</p> <p>Dr. Istvan Kiss has appointed a student to fill the fully industry funded PhD studentship and to start our collaborative work with Moogsoft,</p>																														

	<p>see <a href="http://www.sussex.ac.uk/broadcast/read/28729">http://www.sussex.ac.uk/broadcast/read/28729</a></p> <p>Dr. Peter Hurley presented a paper on “Using a Novel Bayesian Approach to probabilistically link records in the ECFSPR” at the Farr Institute of Health Informatics Research International Conference August 2015.</p> <p>High level of media coverage for new ATLAS data taking at LHC</p> <p>Very high level of media coverage for “The Universe is dying”. Including BBC with Stephen Wilkins.</p>
Key activities (not covered by the above categories):	<p>Anotida Madzvamuse is co-organiser of a 5 month Programme running at the Newton Institute in Cambridge <a href="https://www.newton.ac.uk/event/cgp">https://www.newton.ac.uk/event/cgp</a></p> <p>Kathy Romer has been elected to co-coordinator of the Dark Energy Survey (DES) cluster working group. First tranche of DES papers were finished this summer: 9 papers published since May, 20 more submitted (Kathy Romer - a DES Builder - is a co-author of these papers)</p> <p>Philip Harris --- nEDM systematic we predicted in 2013 now verified by data - PRD publication imminent. Same effect exploited in new technique developed, based on spin-echo, which gives direct measurement of neutron spectrum: PRL "editor's choice" publication imminent. This also resulted in most comprehensive &amp; detailed nEDM systematics analysis ever, whence slightly revised world limit, submitted to PRL.</p> <p>Jeff Hartnell reports “first results from the NOvA long-baseline neutrino oscillation experiment. We've seen electron neutrino appearance. Next step to probe the unknown oscillation parameters.”</p> <p>Alessandro Ceri just coordinated the beginning of data taking of the ATLAS experiment with the upgraded LHC. “quite some media coverage too!”</p> <p>Ali Taheri has published a two volume book “Function Spaces and Partial Differential Equations”</p> <p>In a recent publication on Nature Communications, Alessia Pasquazi and Marco Peccianti (UoS) within an international team with researcher from the UK, Canada, China and Australia demonstrated a novel integrated sources of cross-polarized photon-pair for quantum entanglement." <a href="http://www.nature.com/ncomms/2015/150914/ncomms9236/abs/ncomms9236.html">http://www.nature.com/ncomms/2015/150914/ncomms9236/abs/ncomms9236.html</a></p> <p>Istvan Kiss has recently had a paper “Generalization of Pairwise Models to non-Markovian Epidemics on Networks” published in Physical Review Letters <a href="http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.115.078701">http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.115.078701</a>. His paper “Dynamic Control of Modern, Network-Based Epidemic Models was also a featured article in SIAM Journal on applied dynamics.</p>
Any other issues:	Expectation is 30 proposals and £20M in applications in September. Tina Lehmbeck and RDO team have been worked very hard.

Name:	Seb Oliver	School:	MPS
		Date:	25 Sep 2015