

Research and Knowledge Exchange Committee

First Report on School Research Activity for 2018/19

School:	Mathematical & Physical Sciences
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Executive Summary¹

2 large grants giving a reasonably healthy grant income for this report.

Some exciting research awards

The Planck team won the Gruber Cosmology prize (Antony Lewis and Julien Carron):

<https://gruber.yale.edu/prize/2018-gruber-cosmology-prize>

The John Ockenden prize 2018 (European Journal of Applied Mathematics) was awarded to **Vanessa Styles** for co-authored paper.

<http://blog.journals.cambridge.org/2018/06/08/john-ockendon-prize-2018-winner-announced/>

Strong public engagement recognised through Gold award for Sussex at HEIST best community/business engagement campaign', the University's delivery of a powerful public engagement event for Quantum Technology' (with Winni Hensinger). Strong public engagement too with Science Science without Frontiers visit to Afganistan (Kate Shaw) and Royal Society Summer exhibition led by Stephen Wilkins.

Two spin-out companies created.

Part 1: summary of current activity²

Staffing	Number	FTE
Academic staff	64	63.1
Research only	47	46.9

Research students	Number	FTE
Funded	123	122
Self-funding	22	21.5
New	30	30
On continuation	5	N/A
Full-time	138	N/A
Part-time	2	N/A

¹ 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

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

Part 2: Research output

		2017 Total	2018 to date
Peer-reviewed	Authored book	1	0
	Chapters	7	0
	Journal article	288	141
	Edited book	0	0
	Conference contribution	6	1
	Monograph	0	0
	Other	1	0
Total	Theses	25	21
		Number	
Non peer-reviewed (where known)	Authored books	0	0
	Chapters	0	0
	Journal article	0	0
	Book reviews	0	0
		Number	
Conferences hosted		7	5
4* publications produced (self-assessed)		30	10

Part 3: Summary of performance in 2017/18

	Number	Total amount (£)
External funding grants (for previous financial year)	38	4,581,404
External consultations	3	7540
		Number
Staff / research mentions in press (where known)		
Local		1
National		2
International		2

Part 4: Activity since last reporting period, from 01 May 2018 to 30 September 2018

Research related appointments:	<p>Dr Ben Allbrooke. PDRA in EPP (renewal).</p> <p>Dr Hualong Bao. PDRA in Experimental Photonics (renewal).</p> <p>Dr Nicola Abraham. Research Fellow in EPP.</p> <p>Dr Luigi Di Lauro. Research Fellow in Atomic Clock Development (STA).</p> <p>Dr Stephen Duivenvoorden. Research Fellow in Data Science (renewal).</p> <p>Dr Xavier Fernandez Gonsalvo. Research Fellow in Portable Atomic clocks.</p> <p>Dr Amruta Gadge. Research Fellow in SPQR unit.</p> <p>Dr Pierre Lasorak. Research Fellow in EPP.</p> <p>Dr Luke Peters. Research Fellow on the TIMING project.</p> <p>Dr Reuben Puddy. Res Fellow in Quantum Device Engineering (renewal).</p> <p>Dr Yusufu Shehu. Postdoctoral Res Fellow (renewal).</p> <p>Dr Luke Vinton. Research Fellow in EPP (renewal).</p>		
Details of key research grants received (i.e. in top decile of all research grants received over last 3 academic years):	<p>Ilian Ileiv. Paving a Path to the First Stars, £521,133</p> <p>Alan Dalton. Nanomaterial Systems for Applications in Barcoding, Time-Temperature Indicators, Functional Coatings and Medical Sensors, £598,943</p> <p>Antonella De Santo. ATLAS Phase-2 Upgrade 2018-2024 (Sussex Component), £469,782</p>		
		Total (£):	1,589,858
Highlighted awards and recognitions:	<p>Simon Peeters was selected by the UK collaboration management to be Project Manager for the DAQ (data acquisition) of the 7-year DUNE construction grant.</p> <p>The Planck team won the Gruber Cosmology prize (Antony Lewis and Julien Carron): https://gruber.yale.edu/prize/2018-gruber-cosmology-prize</p> <p>The John Ockenden prize 2018 (European Journal of Applied Mathematics) was awarded to Vanessa Styles for co-authored paper. http://blog.journals.cambridge.org/2018/06/08/john-ockendon-prize-2018-winner-announced/</p> <p>Alessia Pasquazi has won an EPSRC UKRI Innovation Fellowship. "This is a tremendous achievement, and follows a lot of hard work, thanks to Colin, Gisela and all others who supported her" (Philip Harris).</p> <p>Anotida Madzvamuse will be on the Royal Society's FLAIR panel (assessment of grant applications to the Future Leaders. African Independent Researchers), from July 2018</p>		
Highlighted areas of Knowledge Exchange:	<p>Soapbox Science Brighton, Sat 02 June 11.00 – 14.00 Brighton seafront. http://www.sussex.ac.uk/staff/newsandevents/?page=6&id=44770?ref=email</p> <p>Science without Frontiers visit to Afganistan, (Kate Shaw, Wakil Sarfaraz) http://www.sussex.ac.uk/staff/newsandevents/?id=45050?ref=email</p> <p>Sussex Impact day was held Tuesday 19 June 2018. https://www.sutori.com/story/sussex-impact-day-2018</p> <p>The search for inhabitable planets comes to Royal Society Summer Science exhibition (Stephen Wilkins). http://www.sussex.ac.uk/staff/newsandevents/?id=45276</p>		

	<p>National award for recruitment and public engagement work (Winfried Hensinger) http://www.sussex.ac.uk/staff/newsandevents/?id=45425?ref=email</p>
Key activities (not covered by the above categories):	<p>Konstantin Blyuss's research result have been used to provide input for controlled lab experiments in Ukraine, where new crop protection methods based on RNA silencing are developed.</p> <p>Lily Asquith has now her secondment to the Foreign and Commonwealth office under the Royal Society Policy Secondment Scheme: https://www.theguardian.com/science/life-and-physics/2018/jul/09/a-particle-physicist-in-whitehall?utm_source=hootsuite&utm_medium=social&utm_campaign=standard</p> <p><i>Sussex quantum physicist gives evidence to MPs on future of technology</i> (Winni Hensinger) http://www.sussex.ac.uk/staff/newsandevents/?id=45420?ref=email</p> <p>Jeff Hartnell: "With NOvA we made the first ever measurement of electron antineutrino appearance".</p> <p>Robert Smith: "I completed a piece of work with a collaborator that provides an upgrade of the well-known halofit code for predicting the statistical properties of the dark matter and baryon distribution in our Universe. The original version of this work has acquired more than 1300 citations". <i>Precision modelling of the matter power spectrum in a Planck-like Universe</i>. https://arxiv.org/abs/1807.00040</p> <p>The ATLAS collaboration has released a new search for stops decaying to charm quarks. Two members of the Sussex ATLAS group, Dr Kerim Suruliz and Sam Jones contributed to the analysis. Details: http://atlas.cern/updates/physics-briefing/charming-susy-running-out-places-hide</p> <p>Philip Harris reports that "for 19 years, Sussex has held the world record in sensitivity with its measurement of the electric dipole moment of the neutron, carried out at the Institut Laue-Langevin in Grenoble. Now the Museum of Grenoble wishes to mount an exhibit about the origins of the Universe, and some of the hardware from our experiment is to be included."</p> <p>Jeff Hartnell: "We hit a major milestone for the DUNE neutrino experiment. http://news.fnal.gov/2018/09/first-tracks-in-prototype-for-neutrino-experiment/ Our PhD student, Alex Booth, is out at CERN working on ProtoDUNE."</p> <p><i>A total of 23 conference presentations & talks were delivered by MPS faculty and Postdocs during the period May to September 2018. Details can be found in the MPS Research Updates at</i> http://www.sussex.ac.uk/mps/internal/research/reports</p>

<p>Bullet point key activities to be reported to Senate (maximum of 4):</p>	<p>The University of Sussex has signed a Software Licence Agreement with TissueGnostics GmbH for using Software developed by Prof Anotida Madzvamuse.</p> <p>Colin Hayhurst reports two spin-out companies have just been launched:</p> <p>Advanced Material Development (Alan Dalton), which has now secured funding of around £750,000. https://www.advmat.co.uk/latest-news/nanomaterials-specialist-secures-750000-of-funding/</p> <p>DataJavelin (Seb Oliver), a consulting business which has already a number of new clients. https://www.datajavelin.com/</p> <p>Barry Garraway many years ago proposed an experiment to explore how Bose Einstein Concentrates would behave in the absence of gravity – this experiment is now on the International Space Station. (reported by Philip Harris) http://www.sussex.ac.uk/news/research?id=45233</p>
<p>Please provide a brief update on reviews of your schools' research centres (maximum of 250 words):</p>	<p>We have the Sussex Programme in Quantum Research and the Quantum Technology Research Centre – a University Research Centre. The first of these is very new the second is approaching its first year and we are considering the annual review which I hope will be summarised here next report.</p>
<p>Any other issues:</p>	<p>REF Impact case studies in Physics and Astronomy are in state of transition and most haven't made it into latest mock exercise.</p>

Name:	Seb Oliver	School:	MPS
		Date:	19 October 2018