

Research and Knowledge Exchange Committee

Third Report on School Research Activity for 2017/18

February to April 2018

School:	Mathematical & Physical Science
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Part 1: Research output (published)

		2017 Total	2018 to date
Peer-reviewed	Authored book	1	0
	Chapters	4	0
	Journal article	265	38
	Edited book	0	0
	Conference contribution	2	1
	Monograph	0	0
	Other	0	0
Total		272	39
		Number	
Non peer-reviewed (where known)	Authored books	0	0
	Chapters	2	0
	Journal article	0	0
	Other	1	0
	Book reviews	0	0
		Number	
Conferences hosted		7	3
4* Publications produced (self-assessed)		30 **	1

** plus 13 at 3*/4*

Part 2: Activity during the period 01 Feb 2018 to 30 Apr 2018

Research related appointments:	Dr Steven Duivenvoorden, Research Fellow in extra-galactic astronomy. Mr Harold Godwin, Electronics Engineer in Quantum Device Engineering. Dr Mateja Gosenca, Research Fellow in cosmology. Dr Seokjun Hong, Research Fellow (Sussex Centre for Quantum Tech). Mr Iain Hunter, Electronics Engineer in Quantum Device Engineering. Dr Charanjit Khosa, Royal Society Newton International Fellow. Mr Thomas Stevenson, Research Fellow in Experimental Particle Physics.	
Details of key research grants received (i.e. in top decile of all research grants received over last 3 academic years):	Leverhulme Trust award to Prof Istvan Kiss and Dr Masoumeh Dashti. <i>Confronting High Dimensional Network Models with Data: Low Dimensional Forward Approximation and Bayesian Parameter Learning</i> Start date: 01 March 2018 Award amount: £301,665	
Total (£):		301,665

<p>Highlighted awards and recognitions:</p>	<p>Prof Antonella De Santo was recently awarded an IPPP Associateship with the Institute of Particle Physics Phenomenology in Durham to explore synergies and complementarity between the High-Luminosity LHC and future colliders.</p> <p>Prof James Hirschfeld has been awarded the 2016 Euler medal by the ICA (Institute of Combinatorics and its Applications) which “<i>recognizes distinguished lifetime career contributions to combinatorial research.</i>”</p> <p>Prof Anotida Madzvamuse was recently appointed to the editorial board of the Royal Society Open Science Journal as an Associate Editor under the Mathematics Sections.</p> <p>Prof Michael Melgaard has obtained an Asa Briggs Visiting Fellowship for Prof Wenming Zou from Tsinghua University to work together on <i>Variational Methods and Applications to Nonlinear Partial Differential Equations</i>.</p>
<p>Highlighted areas of Knowledge Exchange:</p>	<p>The Mathematics department recently held a three-day workshop <i>New Perspectives in Analysis, Probability and Applications</i> funded by a small grant from the London Mathematical Society. This celebrated the new appointments of Drs Kostas Koumatos, Andrew Duncan and Vlad Vysotskiy). Held 24 – 26 Jan 2018.</p> <p>Dr Luiz Vale Silva reports KE in Rare B- and K-meson decays; perturbative calculations in an extended basis of operators, with the goal to constrain physics beyond the Standard Model of particle physics; sources of CP violation beyond the SM (impacting direct CP violation in the sector of kaons).</p> <p>Dr Omar Lakkis reports: “In January 2018 I participated in the Power Networks Industry Days (organised by Max Jensen, Andrew Duncan and Enrico Scalas). I got interesting exchanges with engineers from Williams regarding mathematical models in battery lifetime modelling. With Vanessa Styles, we thought it might be interesting to follow up this with a view to apply for a joint project.”</p> <p>Dr Sebastian Jaeger informs that TPP group have won a grant from the first round of DIVA awards (https://www.ippp.dur.ac.uk/diva), a scheme to support international visitors to particle physics research facilities in the UK. Professor Lee will visit Sussex this summer.</p> <p>Dr Steve Wilkins has recently been announced as STFC Leadership Fellow in Public Engagement.</p>
<p>Key activities (not covered by the above categories):</p>	<p>The Science Museum exhibition of quantum computing technology was presented by Dr Seb Weidt and colleagues from the Ion Quantum Technology group. It starting 07 February 2018 and runs for four months in the “Tomorrow’s World” gallery. Live events ran from 13 to 15 February 2018.</p> <p>The Lewes STEM Fair was organised by Dr Stephen Wilkins at Lewes Town Hall, 28 April 2018. This is a free festival for local people promoting STEM research. This year it featured the Webb Telescope and the UoS inflatable planetarium. http://www.lewesstemfest.co.uk/</p> <p>A total of 16 talks were presented by MPS researchers to the public, professional workshops, seminars and conferences during the period.</p>

<p>Bullet point key activities to be reported to Senate (maximum of 4):</p>	<p>An STFC Impact Acceleration award (2018) for a value of £100,000 has been won by MPS (Seb Oliver). The award will run until January 2019. The purpose of STFC IAA awards is to support commercialisation of STFC-funded research, support concept studies, training of staff on KE and commercialisation, carry out market surveys and hold showcase events for user or develop proposals for STFC innovation funding.</p> <p>An ESRC IAA proposal for £48,000 to support Creative, Digital and Tech business has been successful and will be contracted to Wired Sussex (Seb Oliver).</p> <p>Potentially life-saving ‘health monitor’ technology designed by University of Sussex physicists (Prof Alan Dalton) “Sick babies in remote parts of the world could be monitored from afar, thanks to new wearable technology designed by Prof Alan Dalton and his team” (09 Jan 2018). http://www.sussex.ac.uk/staff/newsandevents/index?page=6&id=43180</p> <p><i>High-energy terahertz surface optical rectification</i>, a publication by Luke Peters and colleagues. “We have found that it is practically possible to create terahertz in significant amounts by illuminating ultrathin electronic semiconductors, which could simply be placed upon any surface.” This technology may result in a safe alternative to X-ray security scanners. https://doi.org/10.1016/j.nanoen.2018.01.027 http://www.sussex.ac.uk/staff/newsandevents/?id=44372</p>
<p>Please provide a brief update on reviews of your schools’ research centres (maximum of 250 words):</p>	
<p>Any other issues:</p>	<p>Other news: Prof Alan Dalton and colleagues from the Materials Physics group exhibited at the Material Research Exchange 2018 event in London, 12-13 March. As a result the group has engaged with four businesses in order to develop specific materials solutions as well as ongoing research partnerships. Dr Omar Lakkis: We have met with Ambiental to discuss the realisation of impact ensuing from our research. The research on stochastic flood modelling is ongoing, we are in the last phases of developing a one dimensional multilevel Monte Carlo solver (academic version). Jose Verdu Galiana reports that the research contract with Leonardo UK has concluded. A final report has been delivered. Currently we are awaiting the filing of a (possibly joint) patent on the results. Colin Hayhurst informs that a workshop for PhD students was run by Colin Hayhurst and Julia Shalet. 09 February 2018. The topic was how to take forward innovations from their research. Neil Sherborne, together with Dr Konstantin Blyuss and Prof Istvan Kiss, have published a possible explanation of how people’s behaviour during epidemic outbreaks can cause multiple waves of high disease prevalence.</p>

	<p><i>Bursting endemic bubbles in an adaptive network, Physical Review E 97, 042306 (2018).</i></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>
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Name:	Prof Seb Oliver	School:	MPS
		Date:	15 May 2018