

MPS School Activity Report

October to December 2019

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Staff mentions in the press, public engagement

University of Sussex

Anotida Madzvamuse, Chandrasekhar Venkataraman, Vanessa Styles: ‘Sussex mathematicians model how rice blast disease kills enough crops to feed 60 million people yearly’ – “A team of Mathematicians from Sussex have co-written a paper which has been published in the international science journal "Nature"”

(<http://www.sussex.ac.uk/staff/newsandevents/?id=49998>)

University of Sussex

‘New ‘fuzzy’ dark matter research disrupts conventional thinking’ – “New research conducted at the University of Sussex has simulated dark matter in a new way for the first time, disrupting conventional thinking about the make-up of the universe. The research, published in Physical Review Letters, was done alongside Princeton, Harvard, Cambridge and MIT universities and others” (<http://www.sussex.ac.uk/staff/newsandevents/?id=49838>)

The **London Mathematical Society** will fund a Girls in Mathematics Event at Sussex with £500. They aim to have 4 maths based and 1 physics based activity on the day around Easter 2020.

University of Sussex

Dr Nicola Abraham: “I’m going to use the skills I learned at CERN to help tackle climate change” – “Dr Nicola Abraham is a post doctorate researcher in particle physics working at CERN with the ATLAS collaboration, which discovered the Higgs Boson particle in 2012. Her next step will be to apply her data analysis skills to the problem of rising ocean levels”

(<http://www.sussex.ac.uk/staff/newsandevents/?id=50421>).

Conor Boland has been mentioned considerably in the press for his work on a blueprint that could help scientists in optimising the effectiveness of nanomaterials used in health sensors:

<https://phys.org/news/2019-12-blueprint-nanomaterial-newborns-elderly-busy.html>

https://www.eurekalert.org/pub_releases/2019-12/uos-bfn121119.php

<https://www.nanowerk.com/nanotechnology-news2/newsid=54200.php>

<https://medium.com/@bitnanotech/blueprint-for-nanomaterial-development-offers-hope-to-newborns-elderly-and-busy-doctors-8b40e61a33a4>

<https://bioengineer.org/blueprint-for-nanomaterial-development-offers-hope-to-newborns-elderly-and-busy-doctors/>

https://www.sciencedaily.com/releases/2019/12/191211100319.htm?utm_source=dlvr.it&utm_medium=twitter

<https://nano-magazine.com/news/2019/12/11/blueprint-built-for-wireless-nanosensors-that-track-our-health>

<http://7thspace.com/headlines/1066834/blueprint-for-nanomaterial-development-offers-hope-to-newborns-elderly-and-busy-doctors.html>

<https://www.azonano.com/news.aspx?newsID=37088>

<https://www.longroom.com/discussion/1729552/blueprint-for-nanomaterial-development-offers-hope-to-newborns-elderly-and-busy-doctors>

<https://www.printedelectronicsworld.com/articles/19312/blueprint-for-nanomaterial-offers-hope-to-newborns-elderly-doctors>

<https://advancedtextilesource.com/2020/01/08/blueprint-for-nanomaterials-in-wearable-sensors-published/>

Awards & Recognitions

Enrico Scalas has been a Visiting Professor at the University of Turin from 30th September 2019 to 25th October 2019.

Seb Oliver has chaired the UKRI Stephen Hawking Fellowship Prioritisation panel (3-4th December 2019).

Areas of Knowledge Exchange

Manoj Tripathi has been working in collaboration with Rice University.

Talks Delivered

22 talks delivered.

Impact

Laura Marian (PDRA) is employed to work on DISCUS and AstroCast December 2019 -March 2020.

Significant Research Outcomes

28th November saw the unblinding of the last data set from the neutron electric dipole moment experiment at PSI. For the last twenty years a small collaboration with Sussex leadership has led the world in measurement of this important parameter in the field of particle physics. This new measurement is the outcome of a significant upgrade to the apparatus carried out by a much larger collaboration in which the Sussex group, with its extensive experience, has played a crucial part; systematic errors are substantially reduced. The result (currently under embargo) will be published early next year. Meanwhile, construction has begun on a next-generation experiment that will be about 5-10 times more sensitive.

Iacopo Vivarelli has received 14 days of beam time awarded to test a new design of a dual readout calorimeter in September 2020 at DESY, Germany.

Conor Boland prestigious ACS publication <https://pubs.acs.org/doi/10.1021/acsnano.9b06847>
"How to make these flexible materials both more sensitive and to stretch further has been an issue that has stumped researchers till now. In breakthrough work by a Sussex physicist "Stumbling Through the Research Wilderness, Standard Methods to Shine Light on Electrically Conductive Nanocomposites for Future Healthcare Monitoring" published today in the prestigious journal ACS Nano, for the first time a blueprint to help scientists understand how to optimise the performances of these flexible electronics has been presented".

Other news

Vanessa Styles was a member of the moderating panel for the “*Landscape Decisions Programme’s Second Grant Call on Mathematical & Statistical Challenges*”. The Landscape Decisions programme is funded under UKRI’s Strategic Priorities Fund (SPF) and is supported by NERC, AHRC, BBSRC, EPSRC and ESRC.

Vanessa also joined the editorial board of the *SIAM Journal on Numerical Analysis*.

Manoj Tripathi submitted an article as co-author in the *Journal of Materials Science & Technology* in collaboration with University of Malaysia.

Publications deposited in SRO

Mathematics

- Accepted: 4
- Published: 2

Physics and Astronomy

- Accepted: 6
- Published: 49

Grants – Submitted & Awarded

Mathematics

- Submitted: 5
- Awarded: 2
- Total applied amount: £1,122,744

Physics and Astronomy

- Submitted: 24
- Awarded: 12
- Total applied amount: £17,259,529