

UNIVERSITY OF BIRMINGHAM

School of Physics and Astronomy

WEEKLY BULLETIN/NEWS

Monday 13th November 2017

School of Maths Seminar

Tuesday 14th November 2017 at 15.00 in Physics West Lecture Theatre 117

Speaker: Dr Dylan Owen, King's College London

Title: Mathematical descriptions of molecular spatio-temporal organisation during T cell signalling

T cells, white blood cells of the immune system, attempt to detect foreign pathogens and activate accordingly, while seeking to avoid activating in response to the body's own cells. While most of the signalling proteins involved are known, it is the nanoscale spatio-temporal organisation of those proteins which is thought to provide regulation of this important immune response. Recently, single-molecule localisation fluorescence microscopy has allowed the coordinates of signalling molecules to be mapped with nanometre precision. These are spatial point patterns, rather than pixelated images usually encountered in microscopy. Open mathematical questions remain for the field including the information content of such patterns and how best to define spatial and temporal resolution. Here, we develop mathematical descriptions for protein organisation in T cells from such data including cluster analysis, fibre-tracing, co-localisation, co-clustering and live-cell dynamic analysis. We are attempting to develop systems biology approaches to establish the causes and function of molecular clustering which is now thought to digitise signalling and set activation thresholds and levels and to establish links between nanoscale mathematical descriptions and macroscale cellular behaviour.

Metallurgy and Materials Seminar

Wednesday 15th November 2017 at 12.30pm in Metallurgy and Materials, Room 2C30

Speaker: Dr Budhika Mendis, University of Durham

Title: Optimising heterojunction properties in thin-film solar cells

Particle Physics Seminar

Wednesday 15th November 2017 at 13.30 in Poynting Small Lecture Theatre S06

Speaker: Andreas Goudelis, LPTHE Jussieu

Title: Constraining pseudoscalar-mediated dark matter models with the LHC and Cosmology

Physics Colloquia

Wednesday 15th November 2017 at 16.00 in Poynting Small Lecture Theatre S06

Speaker: Nicola Tartoni, Diamond Light Source

Title: High Energy Physics detector technologies in photon science

Theoretical Physics Seminar

Thursday 16th November 2017 at 13.45 in Physics East Theory Library

Speaker: Sid Parameswaran, University of Oxford

Title: Quantum Hall Valley Nematics

Cold Atoms Seminar

Friday 17th November 2017 at 12.00 in Physics East 217

Speaker: Mark Bason, University of Sussex

Title: Dispersive probing of atomic gases

Metamaterials Research Group Seminar

Friday 17th November 2017 at 15.00 in Watson Building Lecture Theatre C (G24)

Speaker: Eric Plum, University of Southampton

Title: Active control of metasurface functionalities in Southampton

Outreach System

Reminder: Please remember to add your outreach events to the new outreach system

<http://www.sr.bham.ac.uk/physicsOutreach/> Please refer to Maria Pavlidou's email, sent on Friday 22nd September, for the username and password and on how to use the system.

Funeral of Pat Burcham

Pat Burcham, Prof Bill Burcham's second wife died recently at Bryony House. I am sure that Bill's former colleagues will be aware, but they may not have heard that her funeral has now been arranged by her nephew, David Wood, to be at Lodge Hill at 11.30am on 14th November. I understand from David that he is in the process of arranging a gathering afterwards.

Ted Forgan

EPS Inaugural Lecture

Wednesday 22nd November 2017 at 17.15 – 18:30 in Lecture Theatre GC13, C Block, Metallurgy and Materials Building ([G6 on campus map](#))

Title: Casting: art to aerospace

Speaker: Professor Nick Green, Director of the High Temperature Research Centre, and Professor of Manufacturing Technology, University of Birmingham

Professor Nick Green's Inaugural Lecture will focus on the development of casting, a 6,000 year old manufacturing process in which a liquid material is poured into a mould. It will address its progress from ancient art form to present and future applications in aerospace, and high-tech manufacturing. Professor Green will explain through discussion and practical demonstrations the process of casting, its ability to profoundly influence material performance, and its use in a wide range of applications. The lecture will reflect on the amazing pace of innovation that has taken place in casting since the first jet powered flights, and explore how new growth is critical to driving future improvements.

Complementary alcoholic and non-alcoholic drinks will be served at the drinks reception following the event. Alcoholic drinks will be only be served to those who are aged 18 or over.

If you wish to attend this event, please complete the online [registration form](#). For further information, please contact: epscommunications@contacts.bham.ac.uk.

EPS Christmas Lecture

Thursday 7th December 2017 at 6:30pm in Elgar Concert Hall, Bramall Music Building
(map ref R12) A book signing with Simon and festive drinks reception will follow the lecture

Speaker: Simon Singh, Author, journalist and TV producer, specialising in science and mathematics
Title: “From Theorems to Serums, From Cryptology to Cosmology... and The Simpsons”

Join Simon Singh, one of the world's most popular science and maths writers, on a whistle-stop tour through the bestselling books that he has written over the last two decades. Fermat's Last Theorem looks at one of the biggest mathematical puzzles of the millennium; The Code Book shares the secrets of cryptology; Big Bang explores the history of cosmology; Trick or Treatment asks some hard questions about alternative medicine; and Simon's latest book, The Simpsons and Their Mathematical Secrets, enters the world of the world's most popular TV show.

If you wish to attend this event, please complete the online registration form:

www.birmingham.ac.uk/eps/christmaslecture

Please note registration is essential and all spaces are allocated on a first come first served basis.