IOP Institute of Physics

FREE ADMISSION

Wolverhampton Physics Center

Lectures for this year's edition will mostly be online, but three will be hybrid (both online and onsite). All at UK tea time (17:00) for the chance to interact with the speaker

To join online:

Follow the twitter link below:
https://tinyurl.com/IOPWLV-21-22
and register! (free)

To join onsite:

November, January & March Lectures can also be attended in person in the Wulfruna Building, Wulfruna St, Wolverhampton WV1 1LY

To join remotely:

Visit the IOP Regions and Nations YouTube Channel
at https://tinyurl.com/ioptalks

This is free
and open to all


Varlamov


Laussy


Bencsik


Kavokin


Sinclair


Voronova


Eratosthenes


Bravo Abad

IOP
Institute of Physics

UNIVERSITY OF WOLVERHAMPTON

West Midlands Branch
Wolverhampton

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Evening Lectures
Programme 2021–2022

Wolverhampton Physics Center

UNIVERSITY OF WOLVERHAMPTON

30 September 2021

Prof. Andrey Varlamov

SPIN-CNR, Italy

Nobel prize winner Alex Abrikosov: unusual life and scientific achievements.

Alexey Abrikosov, a recipient of the 2003 Nobel prize for Physics "for pioneering contributions to the theory of superconductors and superfluids", was one of the greatest theorists of Condensed Matter physics. A student of the legendary Lev Landau—whose equations written in collaboration with Vitaly Ginzburg are a pillar of the theory of superconductivity—he explained how magnetic fields may have to extend their fight with superconductivity (known as the Meissner effect) by piercing through the supercurrent with a lattice of quantum vortices. He did so by finding a beautiful and sophisticated solution to the Ginzburg-Landau equations, whose imaging in actual experiments provides one of the most stunning views of the quantum world. In this opening Lecture, one of Abrikosov's students, Prof. Varlamov (left on the picture), a well-known expert in superconductivity, will present not only the Science, but also the life of this contemporary genius, who was able to see farther than Landau himself.

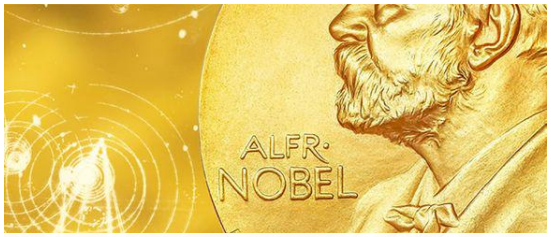
28 October 2021

Prof. Fabrice Laussy

University of Wolverhampton, UK

The Nobel Prize in Physics

The Nobel Prize is synonymous with the most prestigious award that can be bestowed upon the human's endeavours to serve and advance humanity, from Peace to Literature and passing by the most fundamental of all Sciences: Physics. At such, it is one of the most highly regarded events in the Year, pointing at the latest directions in which the human's genius has been doing wonders. It is also a treasure trove of anecdotes, injustices, curiosities and mistakes that make the delight of everybody interested in what's buzzing in the highest intellectual circles, something between gossips and the History of Science. In this Lecture, Prof. Laussy will give his traditional Nobel Lecture where, along with the most crunchy bits of this socio-scientific celebration, he presents in layman's terms the Science honoured on this Year (recipients unknown at the time of writing but not at the time of Lecturing).



25 November 2021

Dr. Martin Bencsik

Nottingham Trent University, UK

How the honeybee is profoundly changing mankind

Honeybees are known to have been managed by man for thousands of years, for pollination, the production of honey, and many other products. The discovery of the meaning of its 'waggle dance' by Karl von Frisch has had profound repercussions, and a wealth of scientific endeavours, mostly in the biological sciences, followed all the way to this day. In this Lecture, Dr. Bencsik, an associate Professor in Physics at Nottingham Trent University and whose research interests recently turned onto bioacoustics, with a focus on honey bee colony condition monitoring, will showcase his work on a topic which one would not immediately relate to Physics. In particular, he will discuss how he uses accelerometers, spectral analysis and machine learning to further our understanding of the honeybee's social behaviour. His finding suggest that there are still plenty of fundamental discoveries for physicists to make in this fascinating field of science.

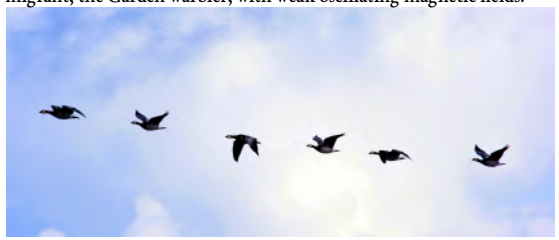
23 December 2021

Dr. Kirill kavokin

St.Petersburg State University & Sechenov Institute of Evolutionary Physiology and Biochemistry

Animal Navigation & Magnetoreception

There is one big natural mystery that has been daunting to scientists to this day: that of animal navigation. Countless species, from birds, fishes, insects and mammals, have the uncanny ability to, not only find their ways with an accuracy that reminds our modern navigating methods, but also to go target places they have never been to before. The actual mechanism at play remains unknown. One of the several cues available is Earth's magnetic field, which is known to play a role although precisely how or even through which organs of the animal, is still a baffling question. In this Lecture, Dr. K. Kavokin, an expert of the spin dynamics in solids, will first present the unbelievable prowess that animals can perform when tracked on the map. He will then enlighten us on our current understanding of what may be going on, including his own experiments on disrupting the magnetic compass of a songbird migrant, the Garden warbler, with weak oscillating magnetic fields.



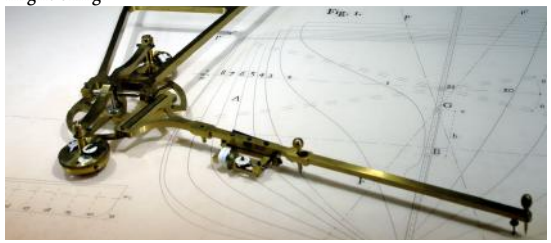
13 January 2022

Dr. Gary Sinclair

University of Wolverhampton, UK

Computing with Light

Nowadays, computing is everywhere. Almost every device we use, is stuffed with sophisticated electronic chips that enable us to order pizzas from our mobile, drive our cars or stream our favourite shows online. However, our ability to algorithmically process vast amounts of data hasn't always been the case. Computing technology has developed at an explosive pace, from just a pencil and paper, through sophisticated mechanical devices to the early bulk electronic and now, chip-scale electronic devices that we use today. Nonetheless, our appetite for ever-greater computing power shows no sign of diminishing, and the development of new technology platforms to match our desires is sought. In this Lecture, Dr. Sinclair, who has worked on both classical and quantum optical computing, will highlight some of the most exciting developments in these areas, explain how optical computing works and explore what the future might bring.



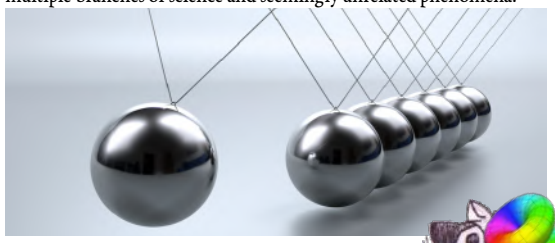
17 February 2022

Dr. Nina Voronova

Moscow Engineering Physics Institute, Russia

The pendula universe

Pendula are everywhere: in clocks, swings, in clothing as we move, waves at the beach, metronomes, electric power lines in the wind. Attend the circus and you see the trapeze artist swinging like a pendulum in the air. Take the pirate ride at the amusement park and become one with the pendulum as your gondola seat swerves in a deep arc from one side to the other. Or, create a pendulum in the backyard by tying an old tire to the branch of a sturdy tree. People have used pendulum dowsing and divining for making life decisions as well as locating water, gold, oil and missing objects. During the Renaissance, large hand-pumped pendulums were used for manual reciprocating machines such as saws, bellows, and pumps. Until the 1930s, pendula were the world's most precise timekeepers. Dr. Voronova will show how, from Aristotle and da Vinci, Galileo and Huygens, and until the modern days, pendulums appear not just in everyday life but in multiple branches of science and seemingly unrelated phenomena.



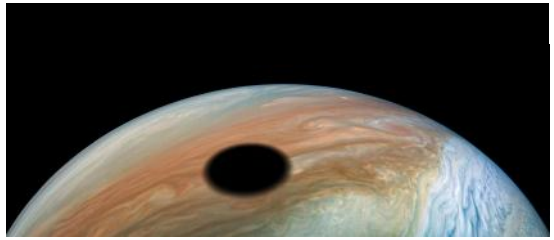
17 March 2022

Eratosthenes of Cyrene

Library of Alexandria, Ptolemaic Kingdom

Connecting a shadow to the Cosmos

Physics is the Eureka of Science: it can turn a basic principle, a fundamental law or a simple idea into an explanation of a mystery of the Universe and make it a simple, rational, hospitable and prosperous place. Maybe the most spectacular feat of dompting the scarry uncertainty of our surroundings with the intellect is that of Eratosthenes, who, contemplating a mere shadow, worked out with uncanny accuracy the size of Earth, an estimate which supposedly inspired, centuries laters, Colombus to go round it. This heroic breakthrough brings together unlikely partners in the quest for knowledge: the sun and its shadows, a glowing well and papyruses, trigonometry and a camel march throughout Egypt. In this exceptional Lecture, a special guest will go through the myths and reality of this coming-of-age experiment and discuss what Physics is about in our relationship to Science, Truth, Exploration and Conquer.



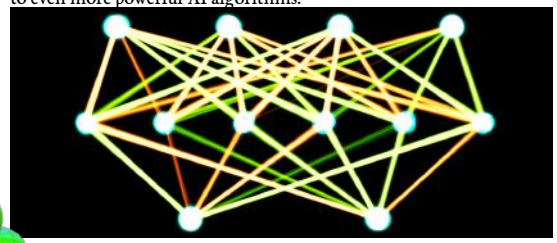
14 April 2022

Dr. Jorge Bravo Abad

Universidad Autónoma de Madrid, Spain

AI for Physics & Physics for AI

The unprecedented advance of artificial intelligence (AI) techniques that we are currently witnessing is dramatically changing the way we interact with technology. Education, healthcare, manufacturing, or transportation are well-known areas in which AI is having a tremendous impact. A more silent revolution is taking place with the application of AI to scientific research. In this webinar, Prof. Jorge Bravo-Abad, a pioneer of AI in Spain, will introduce us to the main ideas underlying the application of AI to advancing research in Physics. He will provide an overview on how AI can help solving a number of fundamental and applied problems in this area that otherwise will be very difficult, if not right away impossible, to tackle. Prof. Bravo-Abad will also tell us about why the connection between AI and Physics is not a one-way road: AI can indeed contribute to the advance of physics research, but, reciprocally, physics insights can lead to even more powerful AI algorithms.



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live online at https://tinyurl.com/IOPWLV-21-22

on-site at the University of Wolverhampton

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