

Varlamov



Laussy

Lectures for this Year's edition will all be online but with the chance to catch them live and interact with the speakers.

### To join live:

Join the link below:  
[www.gotomeeting.com](http://www.gotomeeting.com)

You can contact  
[l.bedall@wlv.ac.uk](mailto:l.bedall@wlv.ac.uk)  
to receive further instructions  
and an email alert  
before the event

### To join remotely:

Visit our YouTube Channel

*Physicists of Wolverhampton*

at [TinyURL.com/y56cjyvr](https://TinyURL.com/y56cjyvr)  
or request a link

This is free and open to all.

Rahmani



Figueroa

Sabio



Bertolotti

López Carreño



Finley

# IOP

Institute of Physics



**30 September 2020**

Prof. Andrey Varlamov  
SPIN-CNR, Italy

## Physicist in the kitchen: exploring the Gastronomic Universe

Physicists have something to say about everything, including those things that non-Physicists worry about. Consider Prof. Varlamov: sure, he could tell you about fluctuations in phase transitions or motion of electrons in graphene... but he can also capture the interest of your grandmother, little cousins or your coffee-lunatic friend by telling them how to best cook a turkey, what makes pizza taste so good or prepare the perfect espresso... In this opening webinar to our 2020 edition of Wulfrunian IOP lectures, *everybody* is invited to confront their personal experience and understanding of how cooking should be done with that of a theoretical physicist, who wandered in the kitchen.

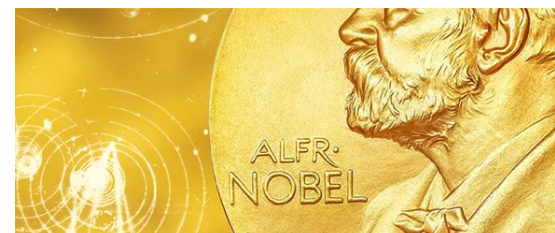


**22 October 2020**

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).

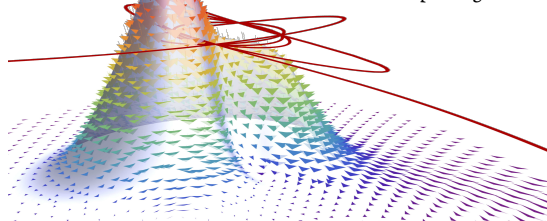


**18 November 2020**

Dr. Amir Rahmani  
Azarbaijan Shahid Madani University, Iran

## A vortex dancing with structured light

The rotation of objects fascinates everybody, even babies. Physicists keep this obsession for things that go round, introducing new toys to keep playing such as angular momentum, a challenging concept to students taking a first course in mechanics. When it turns to fields, new types and notions of rotation emerge. In this webinar, Dr. Rahmani, a theoretical physicist who specializes in the dynamics of so-called structured light, will introduce the problem of rotation in optical and quantum fields. In this case, he will show that angular momentum can spin the head of even the most hardened physicist. In particular, he will show how coupled fields can trigger a beautiful and exotic dance with the vortex core which has no known mechanical counterpart, with arbitrary fast accelerations and detours by infinity. No prerequisites to enjoy but a good stomach and resilience to spinning fast.

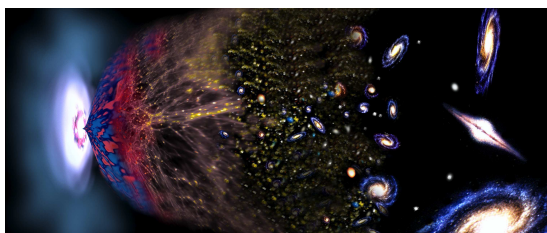


**16 December 2020**

Dr. Daniel G. Figueroa  
Instituto de Fisica Corpuscular, Spain

## Can we photograph the Big Bang?

The Universe has been expanding for approximately 13,700 millions of years by now. The fact that we talk about a 'lifetime' of the Universe, implies implicitly that the Universe has actually begun at some moment. In this Webinar Dr. Figueroa will explain that, in fact, even if surprising to some, it is technically possible to take some sort of photograph of the beginning of the Universe... well, maybe not of the beginning, beginning itself, but at least of some infinitesimal small fraction of a second after the Universe had commenced to exist. He will explain myths and facts about our current scientific understanding of the very first moments of the Universe. In particular, he will explain how misleading it is to assume (as popular culture often does) that there is an initial 'Big Bang', and he will discuss, at a lay level, what is the scientific expectation to obtain direct observational evidence from these primordial moments of the Universe.



**13 January 2021**

Dr. Javier Sabio  
BBVA, Spain

## From Physicist to Quant-Analyst

Everybody keeps one wish in store to be, "I want to get rich", when considering one's hypothetical interaction with the One Thousand and One Nights' Genie granting you three options. How do you get to even only enter the Cave of unlimited wealth in the real world? Physics has a few ways in. One will be revealed by Dr. Javier Sabio, who used his skills and formation as a physicist to transmute into a choreographer of the stock market. Now head of the Advanced Analytics & Algorithmic Trading at BBVA, one of the largest European financial institutions, Dr. Sabio will highlight some of the biggest influences of Physics in understanding financial markets, and why he believes that a Physics curriculum remains extremely relevant for Quants in the age of Big Data and Machine Learning. And sure, hopefully, also how to get rich.

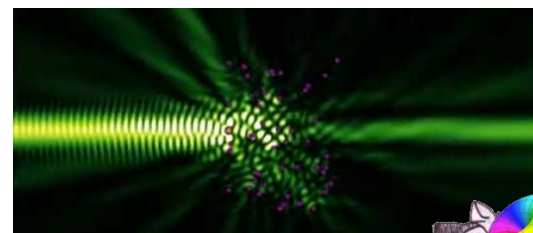


**10 February 2021**

Dr. Jacopo Bertolotti  
University of Exeter, UK

## Animating Physics

One picture is worth a thousand words, and one movie is similarly worth a thousand pictures. In this webinar, Dr. Bertolotti—who delights social media (@j\_bertolotti on Twitter) with several hundred #PhysicsFactlet—will share his views on how to look at Physics differently. Not in equations, but in motion. Research-group leader at the University of Exeter on optical topics, and an expert of random walks of light, he is also known to personally visit other disciplines and phenomena of Physics to bring to the screen complex and/or beautiful physical concepts in the form of insightful animations. If you never understood or even never heard about reference frames, tunnelling in the time domain, coherent states of oscillators or time-dependent orbitals, join us for an enlightening journey in the abstract, mysterious and beautiful corners of modern physics. And prepare for a few *Wow!* moments.

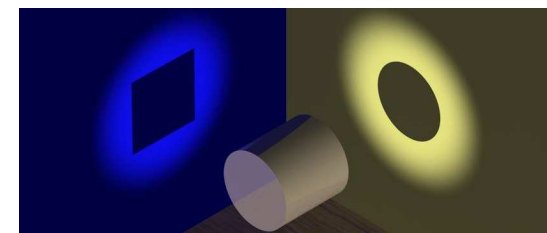


**10 March 2021**

Dr. Juan Camilo López Carreño  
University of Wolverhampton, UK

## Is it a wave or a particle?

Is it a square or a circle? Now you know how it can be both depending on how you look at it. Next question. Is it a wave or is it a particle? This one is much trickier, and even if you don't have a clue, tricks from game theory such as making a random guess won't help you, especially if you play with a quantum physicist. The answer is the most unexpected, shocking and mind-boggling, not to say bamboozling, ever formulated by Science. In this webinar, Dr. López Carreño will explain why everybody seems to have a different opinion, ever since the times when things didn't even have to be complicated and were just a matter of a few experimental checks, and share his own personal insights on this question that is still as burning today as when it was bringing Newton (the corpuscular guy) to have all the pictures of his wave antagonist, Hooke, destroyed.



**28 April 2021**

Prof. Jonathan Finley  
Technische Universität München, Germany

## Teaching 2D materials about the third-dimension

Physical phenomena can take on very different forms depending on the dimension of the space where they occur. With the technological progress of the past decades, the once-fictional flatland universe became a reality with so-called heterostructures, that restrict particles to live in a plane (quantum well), a line (quantum wire) or even in a single point (quantum dot). In this closing webinar to the series, Prof. Jonathan Finley, Chair of Semiconductor Nanostructures and Quantum Systems at the Technische Universität München in Munich, will give a pedagogical introduction to the nice things that happen in space of reduced dimensionality and how this powers today and tomorrow's electronics and optics. He will then break this paradigm by bringing the extra dimensions back.

