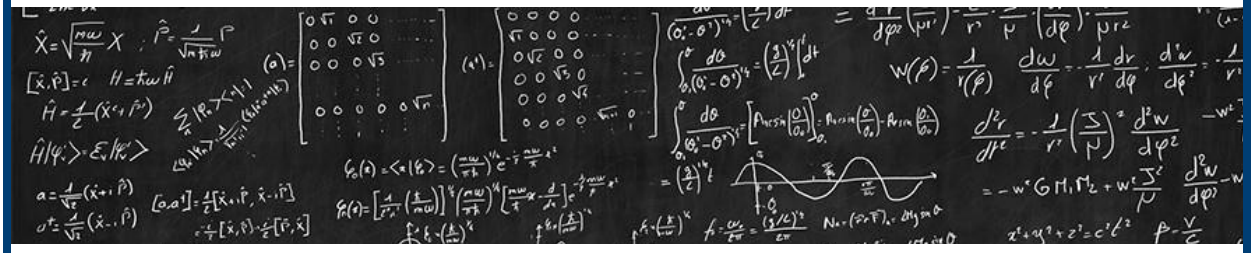
LUCIDUS
NOVEMBER 2020 PHYSOC NEWSLETTER

15 Minute Physics
Building a Vortex Laser
by Jan W T Geberbauer

12:00 on November 17th

The brand new series 15 Minute Physics will commence this Tuesday, November 17th, at 12:00 (UK time) on the Physics Society MS Teams Channel or you can join the event directly here. The talk will be delivered by Photonics PhD student Jan W T Geberbauer and will be followed by a virtual tour of his lab! In 15 minutes, Jan will be presenting his research themed "**Building a Vortex Laser**". We designed this series for all undergraduates who want to learn more about the different fields of research one can pioneer as a postgraduate physicst. We encourage all those who want to find out more about photonics and wish to chat to a PhD student about postgraduate life in general to come to the event!



Introduction to Quantum Computing
by Prof. Myunghsik Kim

15:00 on November 18th (1 hour)

Quantum computing is the hot topic everyone is talking about. The Physics Society, in partnership with the Department of Computing Society, is launching a new series of lectures on Quantum Computing for undergraduates. The first lecture will be on **Wednesday, November 18th at 15:00 (UK time)** and will be delivered by the world-renowned researcher **Prof. Myunghsik Kim**. The lecture will consist of a brief overview of quantum computing and an introduction to the field. Everyone is welcome to attend the event and we are looking forward to seeing you there. The lecture will be streamed here.

Mums & Dads Comedy Night

19:00 on November 21st (2 hours)

Join us for an evening of fun and humour at the Mums & Dads Comedy Night! Whether you fancy yourself as a bit of a joker or just want to be entertained, you'll love laughing with us this Saturday. Join with your physics family (or with your group of friends) and work together to create the funniest physics joke, meme, image, or anything else you can think of and submit it to us on the night. We will then all join together and vote for which one you find the funniest. The winning group will receive a prize so don't miss out!

The event will take place on **Saturday 21st November** at (19:00) (UK time) on Physics Society Team on MS Teams.

MathSoc VS PhySoc Chess Tournament The Final!

13:00 on November 22nd (2 hours)

Thank very much to all of you for all who participated to the chess tournament yesterday, the 15th of November! The turnout was amazing and so were the PhySoc players. Even though Maths won the total game count, we owe a big shout out to Yee Wong who classified first among all players in the selection process. However, the battle is not over yet and next Sunday we will proceed with the final stage.

The 4 players from physics who will proceed to the single elimination tournament are:
1- Yee Wong
2- Andres Perez Fadon
3- Felix Chen
4- Alex Coglin

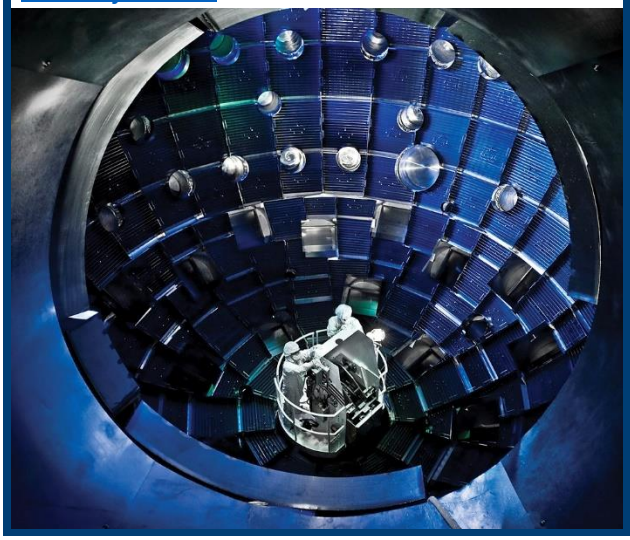
Well done everyone!

Research Frontiers V Modelling Burning Thermonuclear Plasmas by Prof. Steve Rose

12:00 November 23rd (1 hour)

Abstract: "Considerable progress towards the achievement of thermonuclear burn using Inertial Confinement Fusion has been achieved at the National Ignition Facility in the USA in the last few years. When a burning thermonuclear plasma is achieved in the laboratory it will provide a unique and extreme plasma environment and this talk will look at our modelling of such a plasma. We will examine how fundamental plasma processes, many, but not all of which have been studied in astrophysical plasma environments, play an important role. We will see how the use of machine learning has allowed us to improve our design of experiments. Finally we will also look at the possibilities that a burning thermonuclear plasma would give us to study fundamental physics, including studies of Quantum Electrodynamics and the replication and exploration of conditions that last occurred in the first few minutes after the Big Bang."

The event will take place on Physics Society Team on MS Teams.



Ethics in Space Exploration

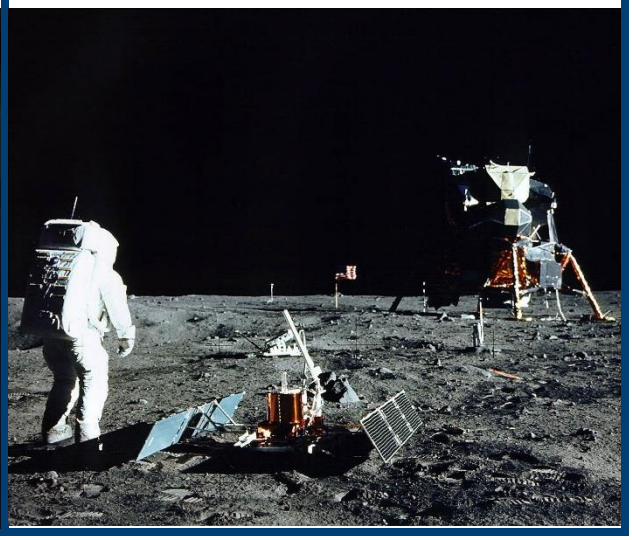
by Dr. Jacques Arnould

18:00 on November 24th

(1 hour)

Very few things are as thrilling as space exploration. Discovering what lies out there continues to be the focus of academia, along with enthusiastic private companies. As aspiring scientists/engineers we sometimes forget to evaluate the impact that research and technology can have on society, the environment and humanity. We are partnering with the Ethical Awareness Society to bring to you a talk aiming to shine light on some questions related to space and space exploration. We will be welcoming the leading researcher in the field, Dr. Jacques Arnould, expert of ethics at the French National Centre for Space Studies (CNES). With his background spanning multiple disciplines such as engineering and history of sciences, he will be introducing us to the big questions that is posed in space exploration and how they are approaches by researchers.

The event will take place on Physics Society Team on MS Teams.



A Surprisingly Promising Approach to a Fundamental Theory of Physics

by Dr. Stephen Wolfram
17:00 on November 25th

Dr. Stephen Wolfram is the creator of **Mathematica, Wolfram|Alpha and the Wolfram Language**; the originator of the **Wolfram Physics Project**, the author of **A New Kind of Science** and other books; and the founder and CEO of Wolfram Research. Over the course of more than four decades, he has been a pioneer in the development and application of computational thinking–and has been responsible for many discoveries, inventions and innovations in science, technology, and business. A full biography can be found here. Join the event on the Launchtime Lectures Chanel.

Send us your Articles!

Hello everyone! I am Marius Ignat, and along with Bilgesu Aydın, Lorenzo Versini, Tobias Farchy and Hanzhi Bao we create this Newsletter. The following article was written by a team of students. We want to includemore of you in this journal. You can send us short essays about student life in the Physics Department, or articles about your scientific projects and UROPs at physics.society@imperial.ac.uk. The word limit is 300 words and feel free to include pictures!

Quill
A Student Start-up

After much brainstorming, a group of fourth year Physicists developed Quill – a software to assist meetings by transcribing, summarising and curating data insights; streamlining the entire meeting workflow and automating the minutes taking process.

Quill's data insights fall within two buckets, utility, and diversity. Utility insights help users understand how many action points they tend to get per meeting, how much they speak in meetings, how long they spend in meetings etc. They can benchmark their personal statistics against their peers to better understand their company culture and individual performance relative to peer averages.

Diversity insights are something that as a female, BAME, tech entrepreneur, Ahana (one of the co-founders) is particularly passionate about. Companies in male-dominated sectors such as technology and finance are frequently confronted with the problem of too few women in these roles. For some, a solution is outreach programmes, for others, a solution is quotas. Whilst one could debate the intricacies of which is more

effective, for the latter solution, companies would argue that they are hitting their diversity KPIs. However, a meeting can have an equal gender split, but the women may not feel comfortable speaking up, or conversely, may even be contributing proportionally more than their male colleagues, but progressing their careers more slowly. Of course, these issues are complex and should not be trivialised. However, quantifying notoriously subjective problems allows for extrapolation beyond diversity into more nuanced metrics, such as inclusion. The Quill data insights interface is designed such that changes over time can be viewed easily, allowing companies to quantify positive trends in company culture, both in terms of productivity and D&I.

Ahana says, "Having recently pitched Quill at the UK's biggest Demo Day, The Seed Stage, we are now preparing for our Y Combinator interview, which is in early December. Things are moving very quickly, but in true Imperial spirit of embracing new challenges, I look forward to the journey ahead and am excited to see where Quill will take us in the coming months"

A Message from Our Sponsor

optiver

Dear Physoc!

Your first semester is coming to an end and here at Optiver, hope you have had an enjoyable one. We would like to send a quick message to inform you of an event which we are hosting on 19th November 16:00-18:00 GMT. In this interactive lecture, our trainer Robber Pullen will take a look at the role of market makers and the value of options in the financial landscape. It's a great opportunity to learn what trading option as a market marker is like. Be sure to sign up to join the event.

Be sure to check out our current open positions on our career site. We have positions for penultimate year and final year students. Freshers or second years of a four year course, we will be publishing our Insights day soon so be sure to keep an eye out for this.

We hope you are all staying safe during this time and have an enjoyable remainder of the year!

Jane Street

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