

The Invisible Universe: Online Particle Physics Masterclasses from King's College London

Dr Kathryn Boast

Senior Outreach Manager

on behalf of the Experimental Particle & Astroparticle Physics Group



The Invisible Universe

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About us



Who's who



Dr Kathryn Boast
Senior Outreach
Manager,
NMES Faculty

**Episode 5: Applying
to university**



**Prof Francesca Di
Lodovico**
Head of the EPAP
Group

**Episode 1: Catch me
if you can**



Prof Jeanne Wilson
Professor in
Particle Physics

**Episode 2: How to
weigh a neutrino**



Dr Teppei Katori
Reader in Particle
Physics

**Episode 3: Cosmic
rays & extreme
objects of the
universe**



Dr Jim Dobson
Lecturer in Physics

**Episode 4: Dark
matters**



About the programme



Logistics

Workshops held weekly on Zoom

Thursdays 17:30 – 18:45

April – May 2025

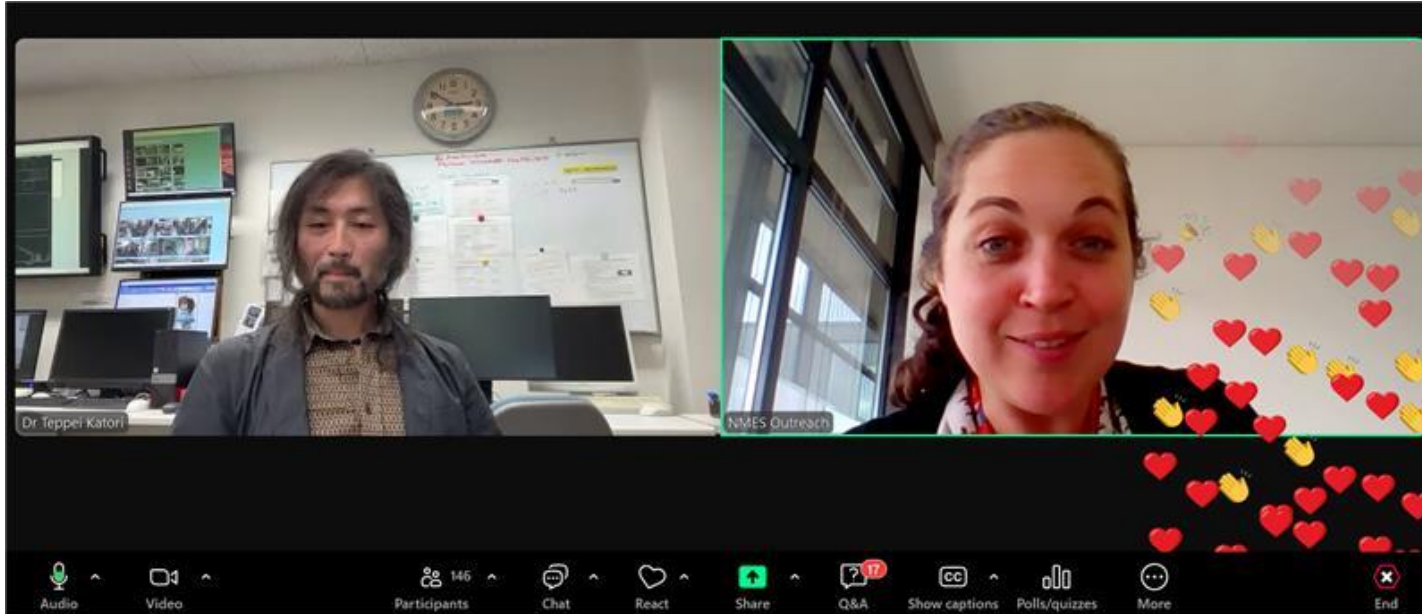
Recordings

- Workshops recorded, with recordings shared with participants after the event
- Recordings only available for a fixed time
- Recordings not made public



Interactivity

In order to maximise engagement and participation, all speakers used the interactive features available in Zoom, including the chat, Q&A, polls and reactions.



About the participants



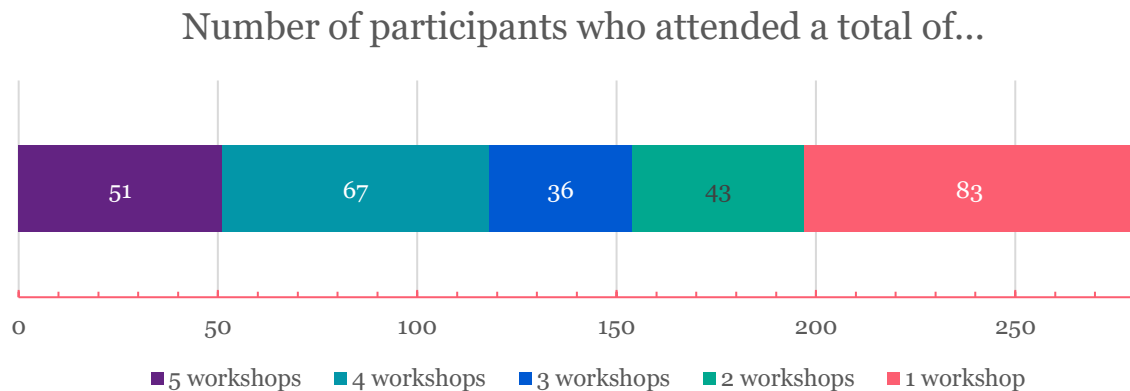
Audience numbers: participation

- **Generally consistent attendance levels across the programme.**
- **Some drop-off between the first and second sessions.**
- Expected for free online programme.
- **Anticipated lower attendance for the final session as largely relevant only to those applying for physics at university.**



Audience numbers: retention

- 280 attended at least one of the workshops.
- 118 attended at least four of the five workshops (so gained a certificate).



Audience location

- **Participants from across the UK including Scotland, Northern Ireland and Wales.**
- **Some remote locations e.g. Cornwall, which typically have less access to physics enrichment content.**
- **A handful of participants from overseas.**
- **Largest number from around London, but not surprising given that our teacher bulletin tends to attract more London teachers.**



Participant schools

- **Almost 90% of participants in Y12.**
- Not a great surprise given timing!
- **Remainder from Y10, Y11, Y13.**
- **84% attended state-funded schools.**
- **85% attended mixed-gender schools.**
- **30% attended academically selective schools.**



Participant demographics

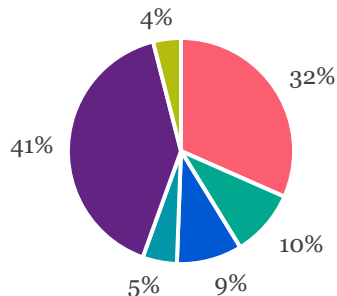
Good gender balance

- 45% of participants identify as female.
- Comparison: A level physics (23% female); UG physics at King's (32% female).

Ethnically diverse

- Around 60% from ethnic minority groups.

Participant ethnicity



Feedback

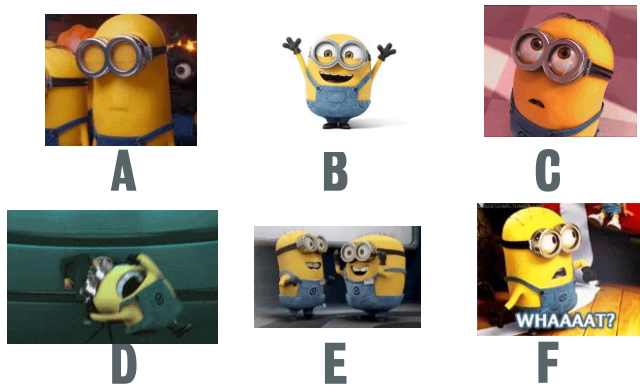


Feedback: Attitudes towards particle physics

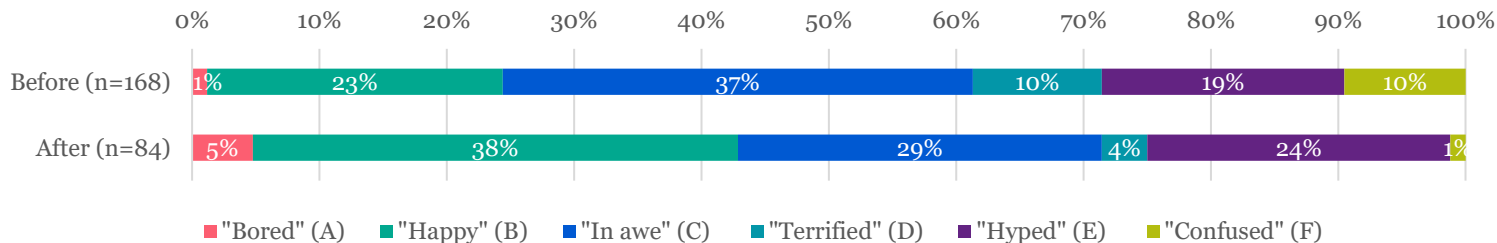
Which gif describes how you feel about particle physics?

Proportion of participants who responded with Minion D ("Terrified") and Minion F ("Confused") dropped substantially after the programme, from a total of 20% to a total of just 5%. This suggests a shift to more positive attitudes towards particle physics as a result of attending.

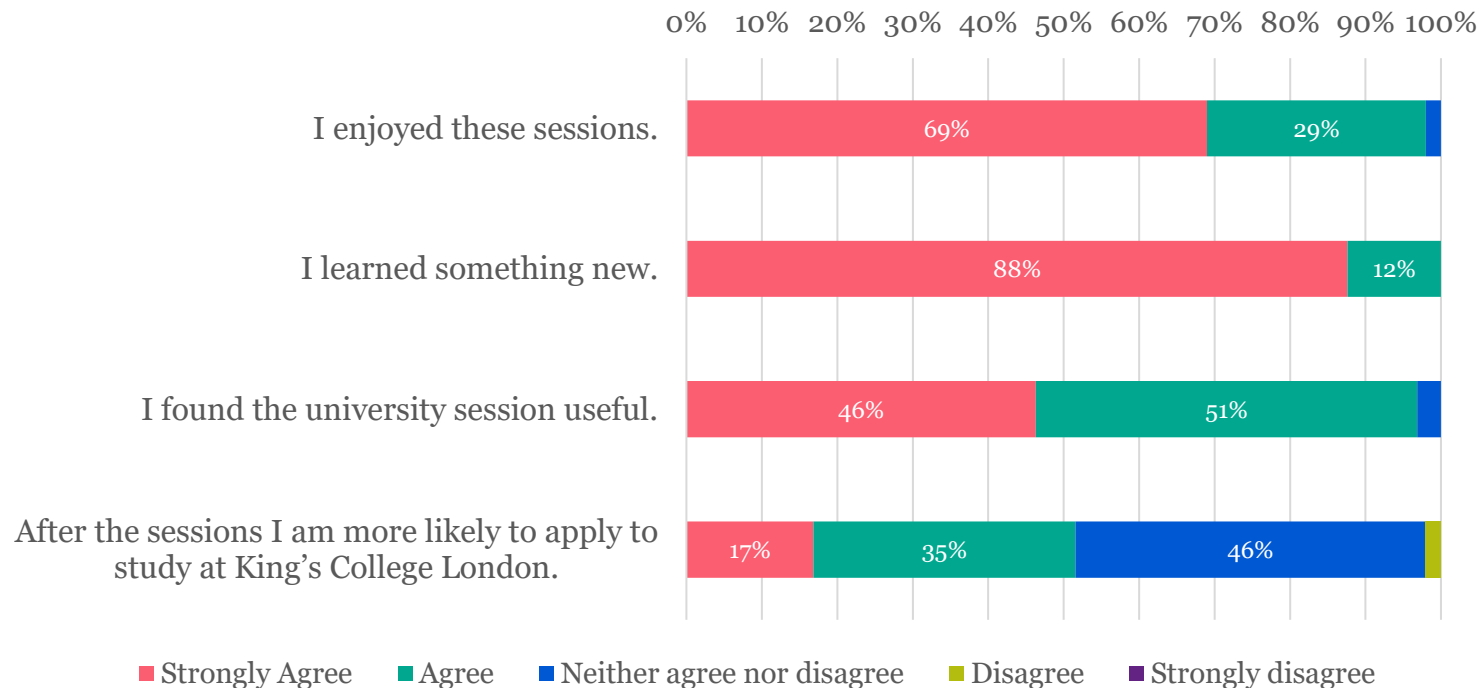
Caveat: might expect those who responded D or F to be less likely to still be attending by the final session!



Which gif describes how you feel about particle physics?

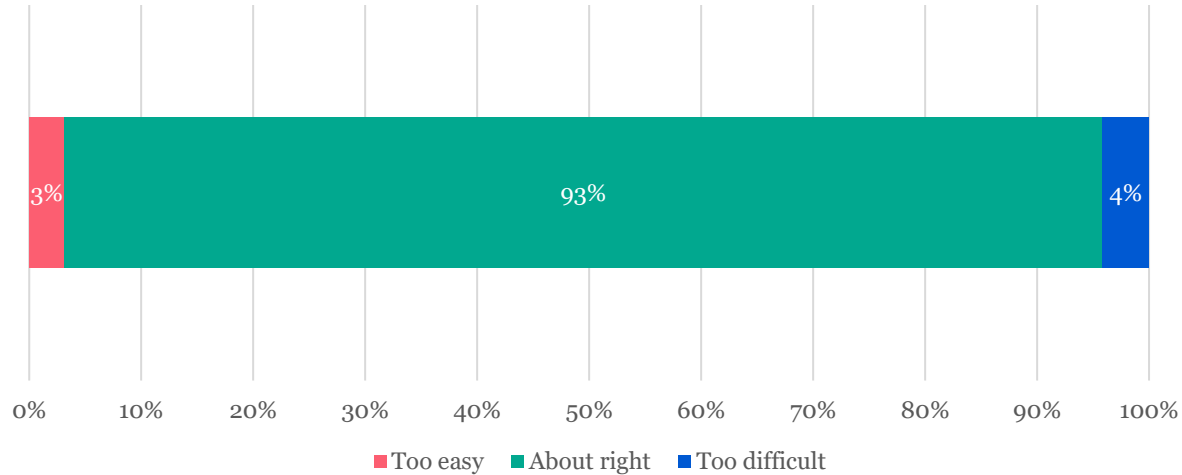


Feedback: Experience of the programme



Feedback: Level of the content

The content of the talks and workshops was...



Feedback: What they enjoyed

Interactivity!

The topics – they were different content to what they were learning in school, and generally attendees enjoyed the opportunity to learn new things.

Expert insight on the topics.



Feedback: Improvements

More!

More sessions, more content.

More interactivity

Sharing slides

Follow-up resources – where to find out more

Potentially a challenge to find resources pitched at the right level for each topic?

Introductory session or introduction pack



Conclusion



What's next?

- **Planning to run the programme again in 2026**
- Earlier in the year
- One or two more sessions, including an introductory session
- Follow-up resources
- **Another online programme in computer science**
- **Developing online programme in mathematical problem-solving**



Discussion

- **What would you add to or change in a programme like this?**
- **What opportunities have we missed?**
- **Suggestions of resources to point people towards**

- **Any questions?**



Thank you

Find out more

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