

Outreach across the School of Physical Sciences $\cdot$

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Meet the Team



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Some quick definitions

Outreach



Working with those under the age of 18

Public Engagement



Working with the general public.
This could be town halls, mixed
audience events, museum
exhibits etc etc

These definitions are **very loose** and regularly interchangeable... even regularly debated!

Where I feel like something is both, or too similar to call, I shall simply use **OPE** to stand for Outreach and Public Engagement

Widening Participation



Also referred to as WP. Our commitment to
make higher education accessible to all,
regardless of background, culture, gender or
sexuality

Outreach -

The activity of an organization in making contact and fostering relations with people unconnected with it, esp. for the purpose of support or education and for increasing awareness of the organization's aims or message; the fact or extent of this activity.

- Oxford Dictionary

Why do we do it?

The Enlightenment tradition (reach ‘the hard to reach’)

A public service duty to share knowledge with the wider public. If people understand science they are more likely to engage with it

What’s the problem?

Our content isn’t accessible to some people

Assumptions about fixing it?

We need to create rich formal and informal learning. We can address the problem by coming up with more creative and inspirational ways of sharing knowledge

Focus of interventions?

- Techniques to making knowledge accessible, including open access
- Providing authoritative accounts and expertise

The Socio-cultural tradition (engage the ‘under-served’)

Respecting how different people come to learn and value science differently and the power of culture in shaping our identities and world views

What’s the problem?

People’s readiness to engage with science is shaped by their culture and social identities - science itself is a culturally constrained

Assumptions about fixing it?

We need to be sensitive to context and culture – and problematize the cultural assumptions about what science is

Focus of interventions?

- Working with people’s cultural preferences ; re-framing the culture of science; multiple narratives; working with trusted intermediaries

The Systemic tradition (fixing the system)

Science forms a part of a much wider complex social system – we need to make sense of individual’s choices as part of this broader ecology

What’s the problem?

We approach ‘science’ as a closed system – in fact it is deeply implicated in wider systems of culture, power and politics

Assumptions about fixing it?

Thinking systemically can help us grasp the complex interdependencies that shape individual choices and intervene to better align or harmonise the system

Focus of interventions?

- Understanding the systems that impinge on science engagement and intervening to enhance them
 - Brokering and aligning interventions

Five approaches to Opening Up Science
National Forum for Public Engagement with STEM
Sept 2016

The Participatory tradition (empower the ‘disadvantaged’)

People’s readiness to participate is strongly determined by inequity and the exercise of power

What’s the problem?

Poverty, marginalisation, access and self-efficacy affect people’s readiness and appetite to engage with science

Assumptions about fixing it?

We need to address inequality and structural barriers if we are to open up science to the ‘disadvantaged’

Focus of interventions?

- Community development; widening participation

The Marketing tradition (target the ‘dis-engaged’)

We are ‘selling’ science in the wrong way – we need to tailor our messages to our audiences

What’s the problem?

Our messages aren’t getting through

Assumptions about fixing it?

If we better understand our audiences and their motivations / interests / values we can target them more effectively – and reach the publics we value

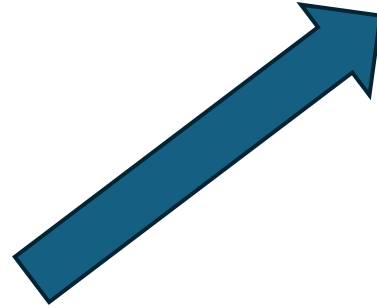
Focus of interventions?

- Intelligence gathering
- Tailoring message to audience; targeting more effectively

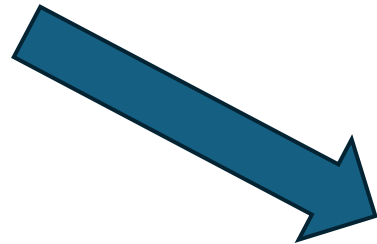
Why do we do it?

University strategy

Access and Participation Plan



Strategy 2031



- Support knowledge exchange including public engagement through a range of pump priming grants to strengthen our impact, partnerships and research environment
- Renew our commitment to widening participation and outreach to raise educational attainment and aspiration, so that students from all backgrounds are able and supported to achieve their full potential

Six objectives:

Black, Asian and Minority Ethnic Student access

Index of Multiple Deprivation Quintile 1 student access

Index of Multiple Deprivation Quintile 1 student continuation

Index of Multiple Deprivation Quintile 1 student completion

Degree awarding for students with a reported disability

Degree awarding for Black, Asian and Minority Ethnic students

Why should you do it?

Involvement in outreach is good for:

Your communication skills

Your teamwork skills

Your problem-solving skills

Your research landscape awareness – yes, really!

Opportunity to apply for grants

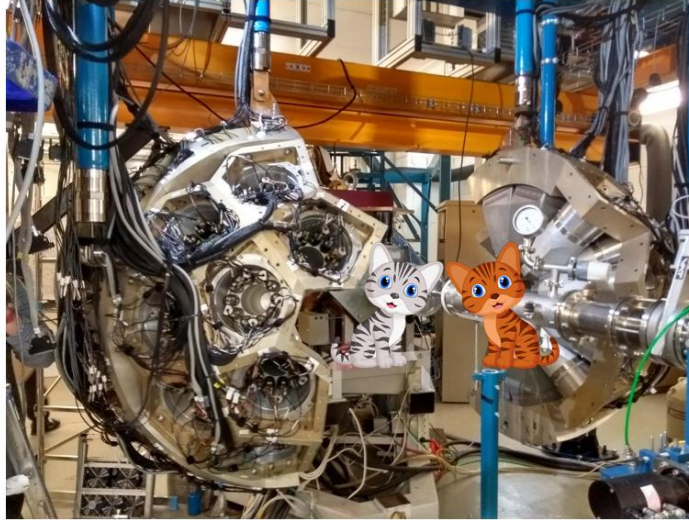
Opportunity to write publications outside your research area!

A few personal reflections

A one off event -

A
Radioactive
Cat has 18
Half lives

-Dr Charlie Devlin



Let's push our
model further...



- In your groups, we will pour a bottle of beer into the beaker as quickly as possible. This will create a beaker full of foam
- Using your ruler, measure the height of the foam, start your timer
- Measure the height of the foam from the BOTTOM OF THE FOAM to the TOP OF THE FOAM every 10 seconds, record your findings in a table
- Using your graph paper, plot your measurements
- Draw a 'curve of best fit' through your data points
- Repeat the 'tangent method' from before

A long term intervention

What is Time – By A. Student

Opportunities

Particle Physics Masterclass

Led by Saskia Charity in 2025

First one in Liverpool in over a decade!

Attended by over 150 students from >20 schools

~40 staff and students to run the day



10:00	→ 10:10	Welcome		10m
10:10	→ 10:55	Particle Physics Overview	← Introductory talk linked to A-level by Saskia	45m
10:55	→ 11:10	Comfort break		15m
11:10	→ 12:00	LHCb Lectures		
11:10		LHCb Experiment Overview	] Talks on LHCb by David Hutchcroft + Paras Naik with Liverpool-built VELO detector on display	20m
11:35		LHCb Hands-on Session Introduction		20m
12:00	→ 13:00	Lunch (CTL atrium)		1h
13:00	→ 14:45	Hand-on Session (+ Lab tours)	← Hands-on activity on real LHCb data, led by David + tours of teaching labs with demonstrations by UGs	1h 45m
14:45	→ 15:00	Walk to Yoko Ono Lennon Centre		15m
15:00	→ 16:00	Video Conference with CERN	← Compare results with other groups + virtual tour of LHCb led by Liverpool PhD student Ho Sang Li	1h
16:00	→ 16:30	Feedback and Close		30m

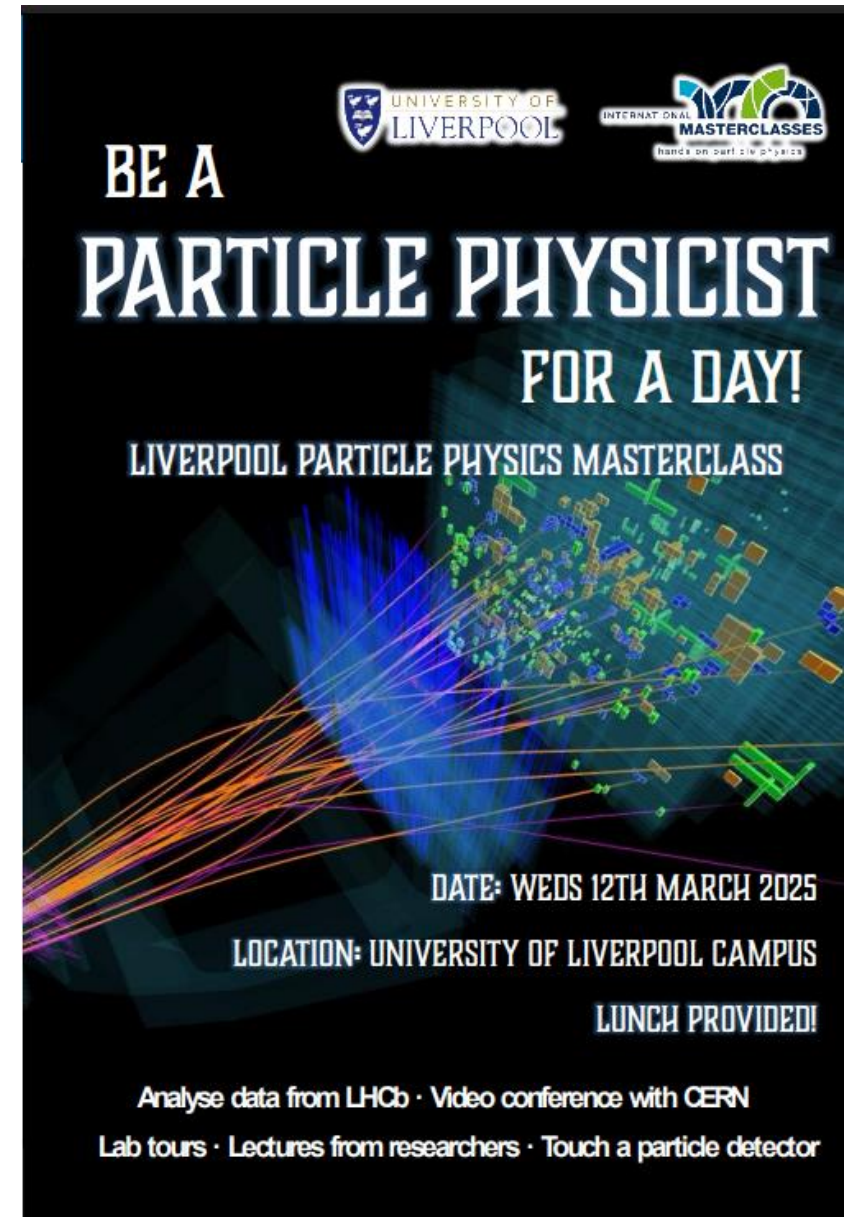
Rio de Janeiro, UFRJ

Geneva, CERN

Pisa

Bologna

Liverpool



Physics Olympics

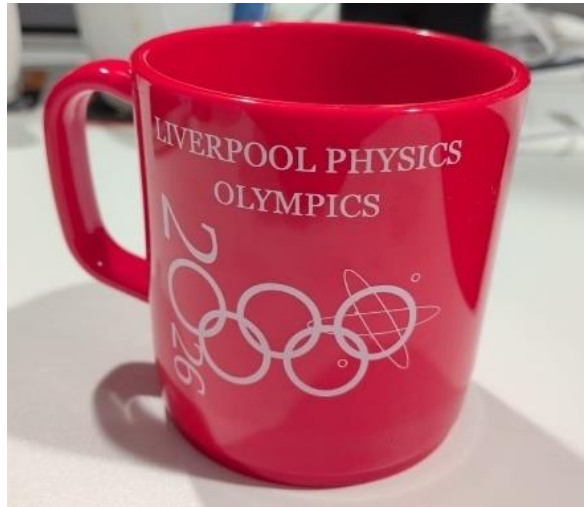


Thanks to the kind sponsorship of Rapiscan– the Physics Olympics returns!

Aiming to have ~200 students in 40 teams competing in a series of activities for a chance to win the grand prize!

Require around 30 staff and students to run the event

Fantastic opportunity for training and involving new members of the outreach group



Work Experience

Now hosting 32 students

Talks around six research areas

Team building exercises

Mini research-based project

Finish with trip to Daresbury lab



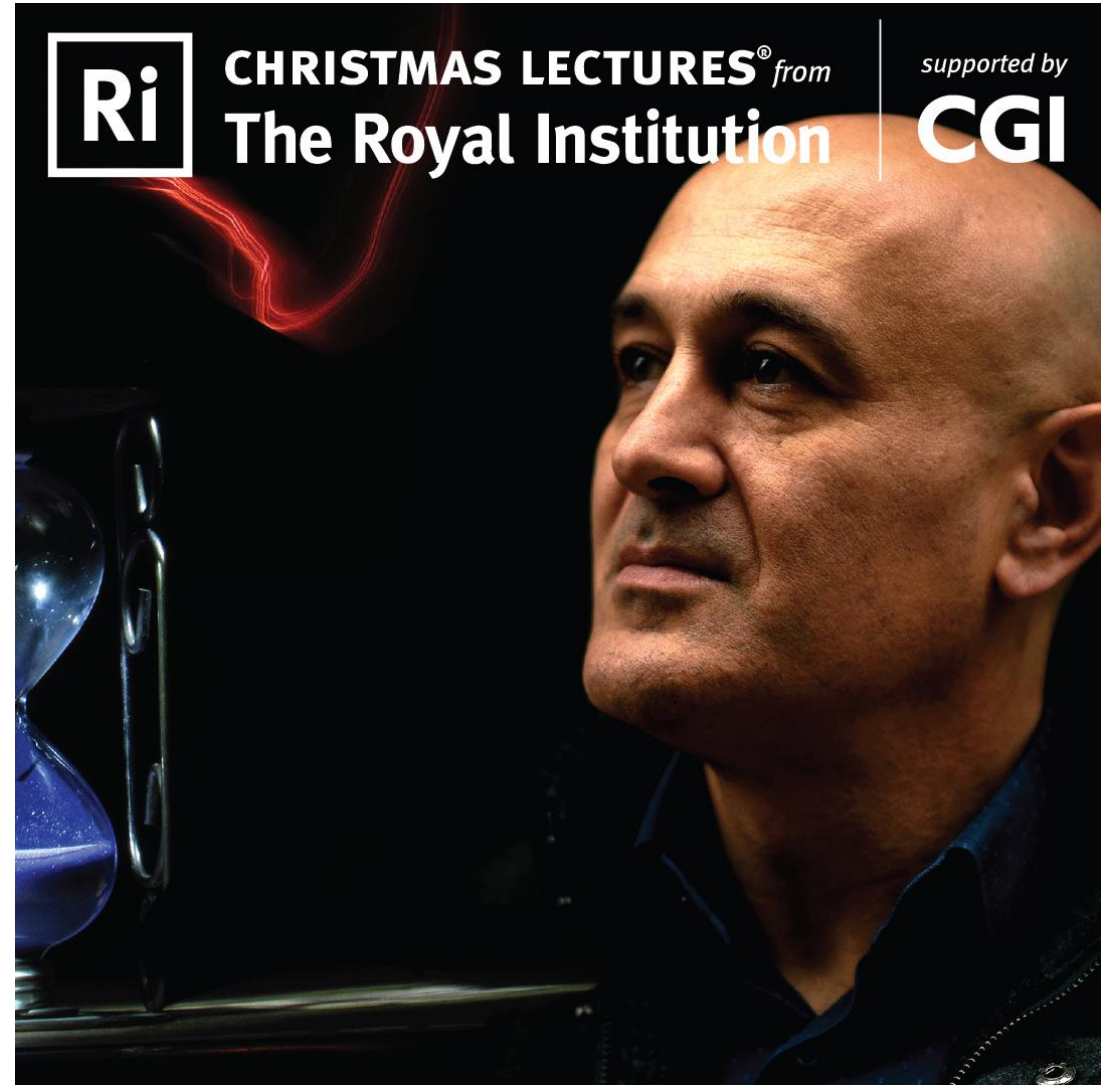
Maths Club

- Monthly Saturdays in term time
- Designed for GCSE & A-Level students
- Talks from staff and PhD students across the School of Physical Sciences & external speakers
- Physicists adapt talks to a mathematical audience

RI Christmas Lecture

We will be hosting a live stream of the lecture (before it is broadcast on BBC)

We're going to put on a 'science fair' beforehand for guests to interact with us and learn more about our science!



What support is available



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