

# **Capturing Nature's Ghosts**

**Royal Society Summer Exhibition**

**2-6 July 2024**

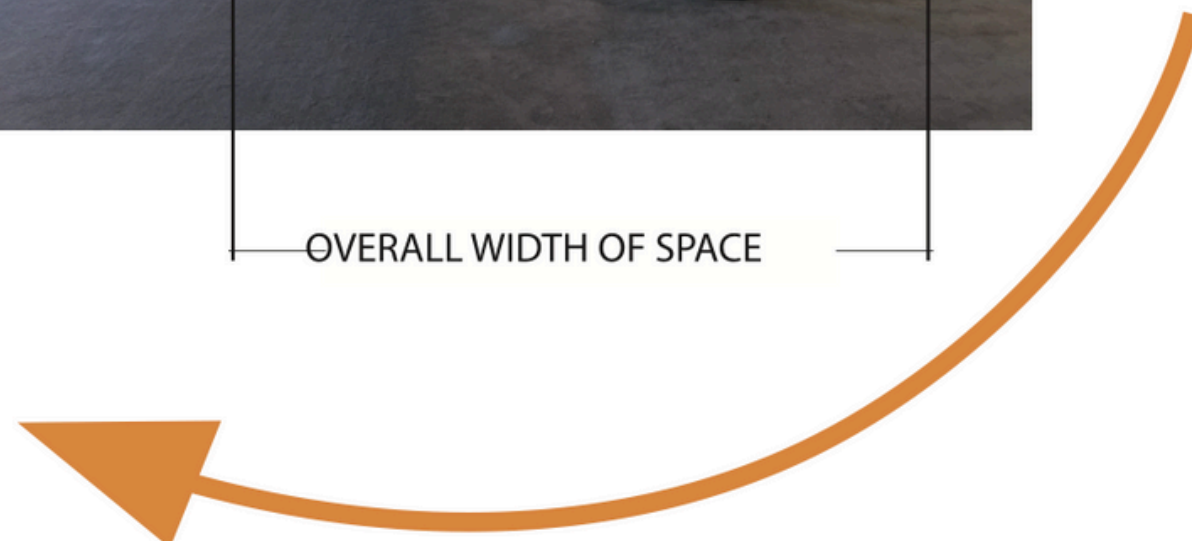
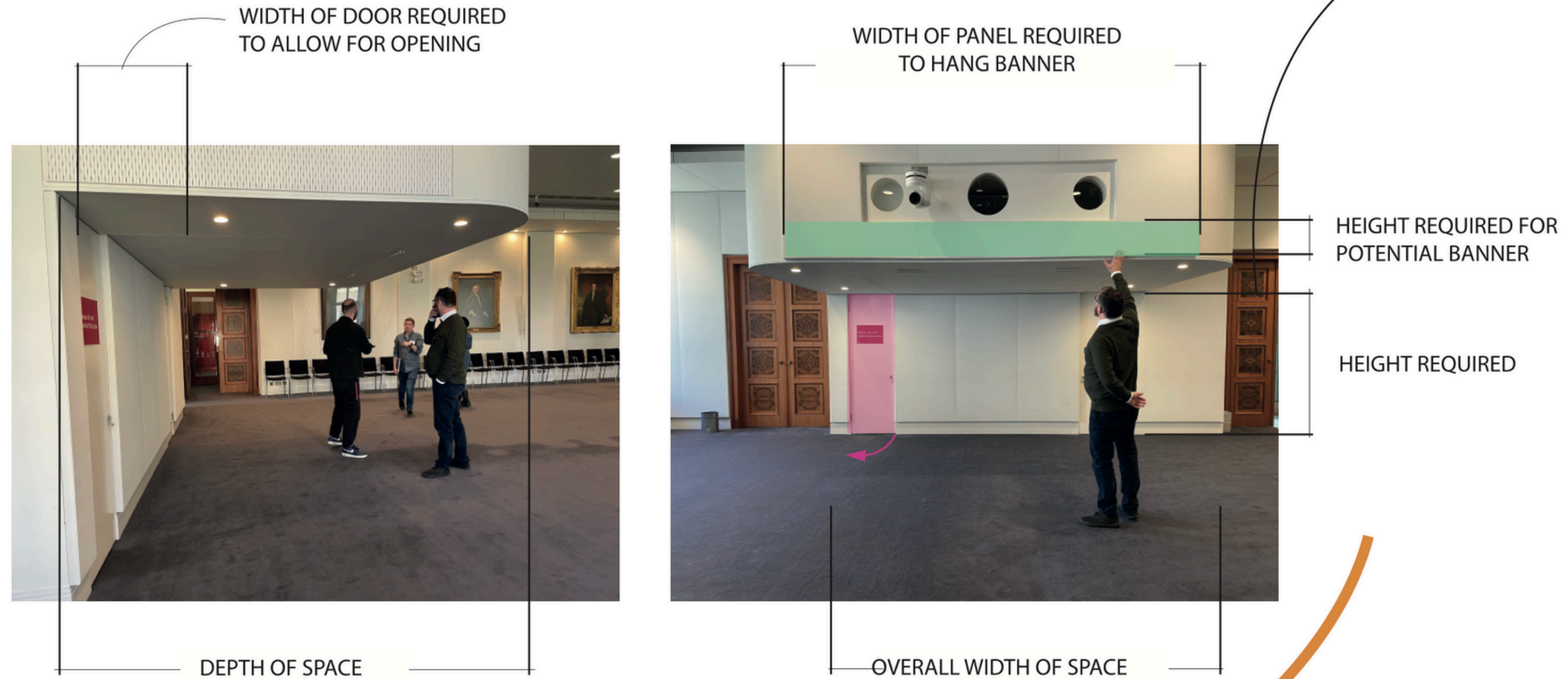
# Messages

- **Neutrinos** are mysterious and they will help us unlock nature's deepest questions
- **DUNE** is the next big international mega experimental that is going to reveal the mysteries of neutrinos
- This is only possible through a diverse and international **collaboration** of scientists and engineers from many institutions working together.





# Exhibition Room



**AUDIENCE FLOW**  
RIGHT TO LEFT FROM MAIN ENTRANCE



# Exhibition Items

## Lancaster

- 3D printed DUNE, ProtoDUNE
- Neutrino game, DUNE fermilab SURF facility

## Sussex

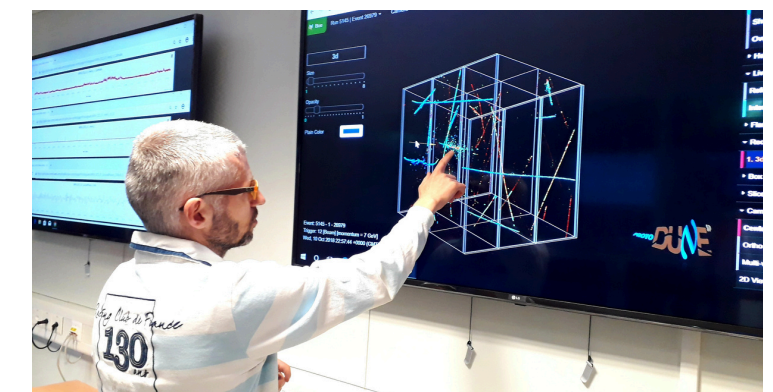
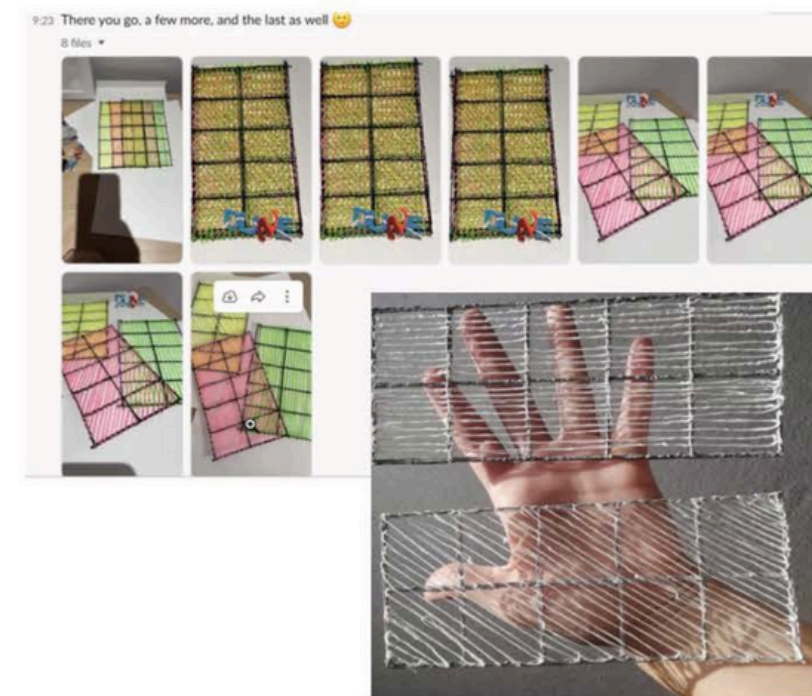
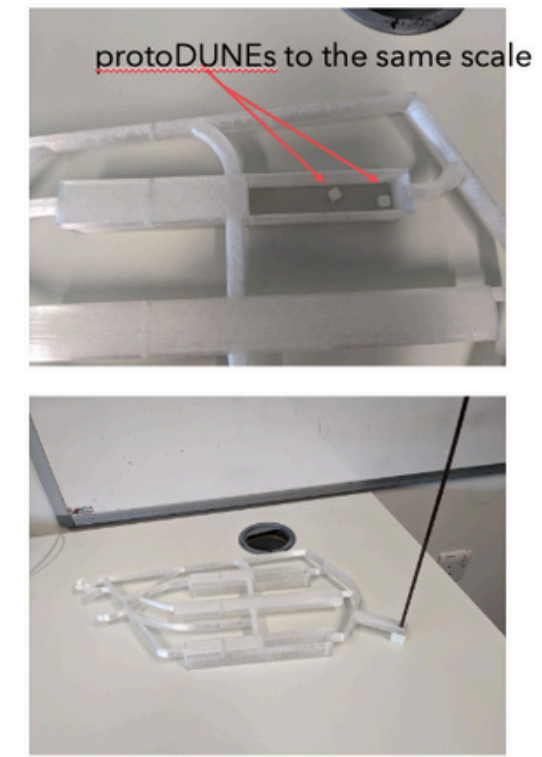
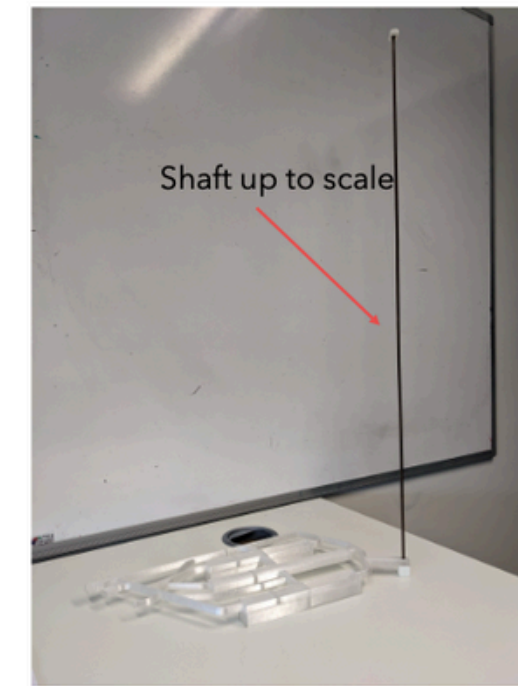
- LED particle detector with gaification of DUNE events
- Fluffy neutrinos
- DUNE VR with Tom Mccauley

## Bristol

- Help with Event displays

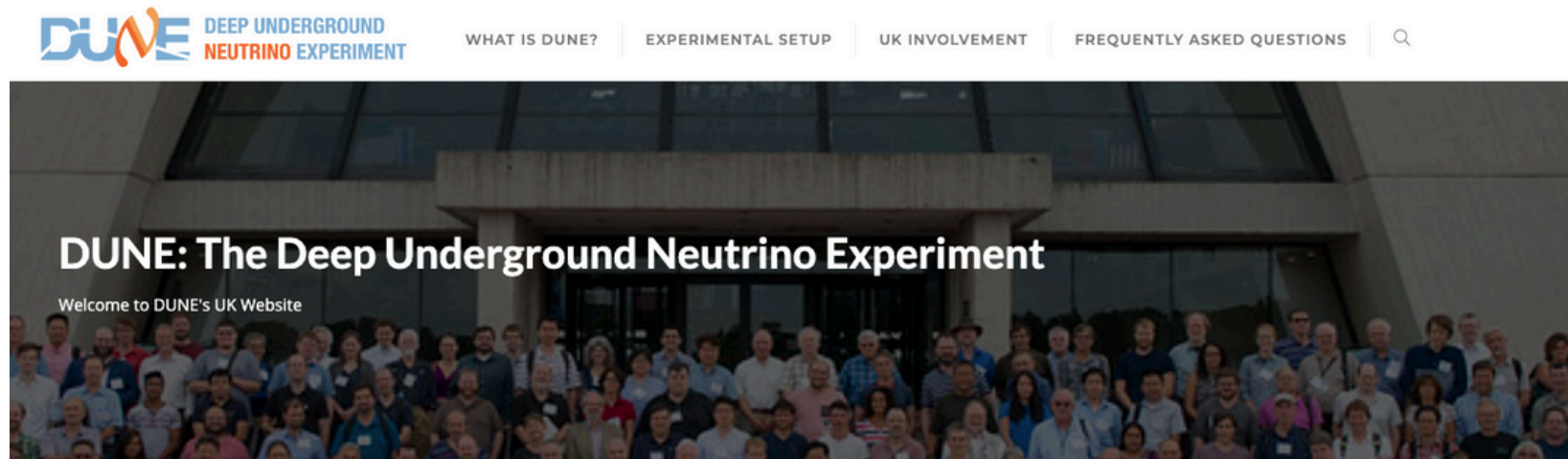
## Warwick

- 3D printed APAs





# DUNE UK Website



## What is DUNE?

DUNE, The Deep Underground Neutrino Experiment, is a cutting-edge experiment developed by the international neutrino physics community to study neutrino science and proton decays.

The experiment will be hosted at Fermilab (Fermi National Accelerator Laboratory) in Batavia, Illinois and will be supported by the LBNF (Long-Baseline Neutrino Facility) which will produce a high-energy beam of muon neutrinos (or antineutrinos). It will utilize the largest neutrino detector in the world to produce the most intense neutrino beam ever, to study one of the strangest, most abundant matter particles in the universe – the neutrino.

One of the goals of the experiment is to study [neutrino oscillations](#). This has driven the large scale design of the experiment as neutrinos need to travel a large distance in order to oscillate. The experiment will determine whether or not neutrinos are [Majorana particles](#); particles that are their own antiparticles.

The initial beam power produced by the LBNF will be 1.2 MW but is being designed to be upgradable to at least 2.4 MW which will facilitate further discoveries. Neutrinos created by the beamline will travel 800 miles (1,300 km) from the LBNF before being intercepted by the huge



## Sheffield

- DUNE UK website up to date
  - replace old plots, images, information
  - Whats new and upcoming?
  - Add new updated DUNE UK Map
  - Add new features, link to indico?
  - Add multimedia content for exhibition, videos, images, audio
  - Add page for impact and outreach
    - Impact could include industry, PhD students trained, etc
    - Outreach will have section on RS exhibition
    - Outreach also provide Neutrino / DUNE outreach resources we are creating for all UK commutee

# DUNE UK Borchure



## UCL

- Short DUNE UK focused trifold brochure for policy makers / VIP
- Working with designer with Stefano
- We will print for the exhibition, PDF available on the DUNE UK website
- Early Career voices, impact, students trained, new technology

# Multimedia

## Edinburgh

- Early Career videos and audio files
- Photos from DUNE UK
- Videos from DUNE UK, in particular Daresbury and othe lab work

## Topics

- Why neutrinos?
- DUNE - what will it discover
- Life as a PhD student





# Volunteers

## Imperial

- Organising volunteers for the exhibition in July
- Will be given training, water bottles and tshirts!
- Pip will give update today
- Need to book slots, travel and accommodation
- We should have money to help, still WIP

# Travelling Exhibition Afterwards

## Bristol

- Check your upcoming science / arts festivals, and events
- Bristol will provide a booking system for the exhibition
- You will get some training to set up and maintain it
- You can also find information on all resources on the website to make your own too