

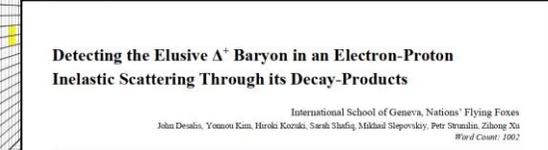
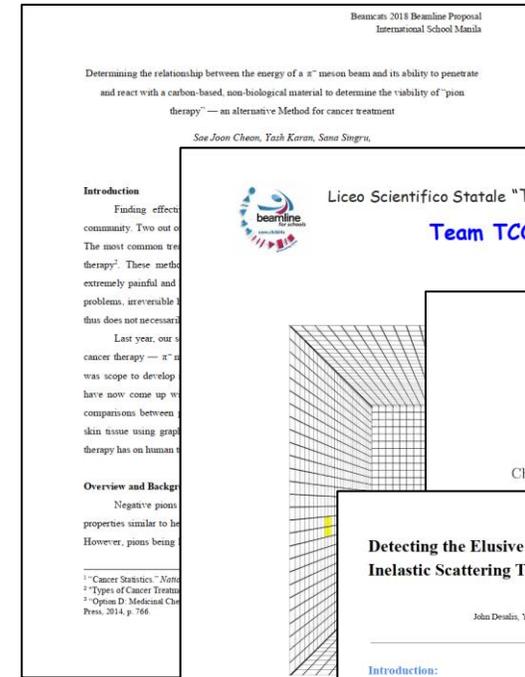
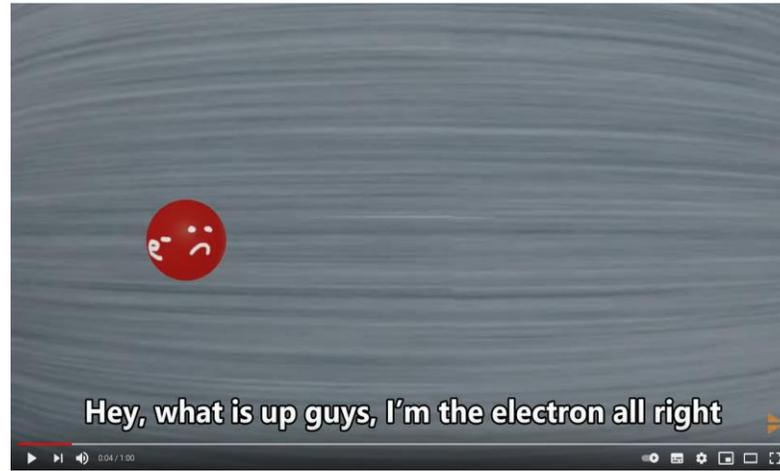
Beamline for Schools

A physics competition for high-school students



BL4S 10th anniversary

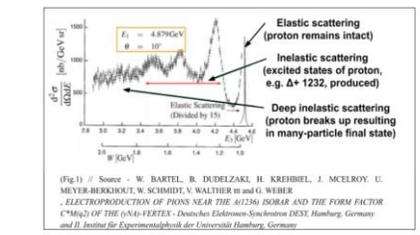
In 2024, **461 teams** representing **78 countries** submitted a proposal, in total **more than 3000 high-school students!**



A blu

Introduction:
Just as scattering visible light off of a cell using a microscope allows us to examine a cell, a collision between resting protons and an electron beam produced by a particle accelerator could allow us to "see" subatomic particles and its miscellaneous interactions otherwise unobservable. Such a collision could result in interesting scattering effects, creation of elusive particles whose decay products can be detected and analyzed to trace back the event, which potentially enables us to further identify properties of the particles.

A histogram depicting the collision of a 4.9GeV electron beam with a static source of protons can be seen on Fig. 1. The x-axis represents the energy/momentum of the scattered electrons, while the y-axis indicates the number of times an interaction of a specific energy/momentum occurred. The approximate peaks in the band of 3.5–4.2 GeV electrons suggest an inelastic scattering, which we are interested in to investigate.



(Fig. 1) Thomson, M. Particle Physics Handout 6: Deep Inelastic Scattering. The University of Cambridge, Department of Physics, Cavendish Laboratory, 2011. www.hep.phy.cam.ac.uk/~thomson/particlephysics/handout_6_2011.pdf

Winning teams 2024

Congratulations!

- ❖ **“Mavericks” from Estonia (CERN)**
calibrate their homemade muon detector for high-altitude ballooning applications
- ❖ **“Sakura Particles” from Japan (CERN)**
optimise their homemade two-dimensional muon detector for muon tomography applications
- ❖ **“SPEEDers” from the USA (DESY)**
research Smith Purcell radiation as a tool for beam diagnostics



Winners of the 2024 CERN Beamline for Schools competition: “Sakura Particles” from Japan (left), “Mavericks” from Estonia (top right) and “SPEEDers” from the USA (bottom right) (Images: Sakura Particles, Mavericks, SPEEDers)

Stay at CERN

First Group Picture



Stay at CERN

Safety Day



Stay at CERN

Safety Day



Stay at CERN

Introduction



Stay at CERN

First visit at the beamline



Stay at
CERN

Visiting CERN



Stay at CERN

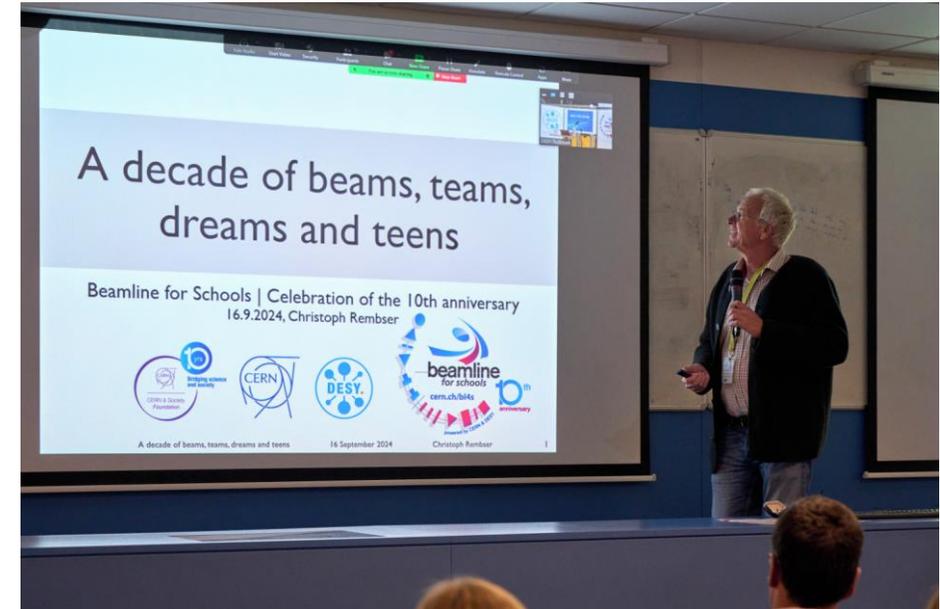
Finally beam days, data analysis and hands-on ...

However, we were so busy that we haven't uploaded any pictures yet :(

Luckily, Rolex filmed and photographed us for 3 days!

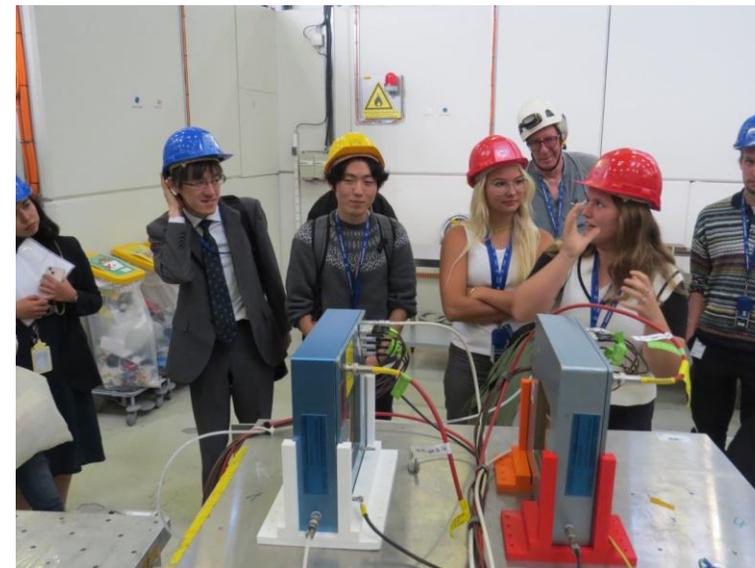
Stay at CERN

Celebration of the 10th anniversary



Stay at CERN

Celebration of the 10th anniversary



Stay at CERN

CERN70 event



Stay at CERN

Visiting CERN



Stay at CERN

Visiting Geneva



Stay at CERN

Visiting Geneva



Stay at CERN

Visiting CERN





*Au revoir**

*French for “see you again”

Departure

26 September:

- ❖ **Check out from the hotel**
by 12:00
 - luggage can be stored in the hotel
 - remove food (if any) from the fridge
- ❖ You can keep your safety shoes and helmets

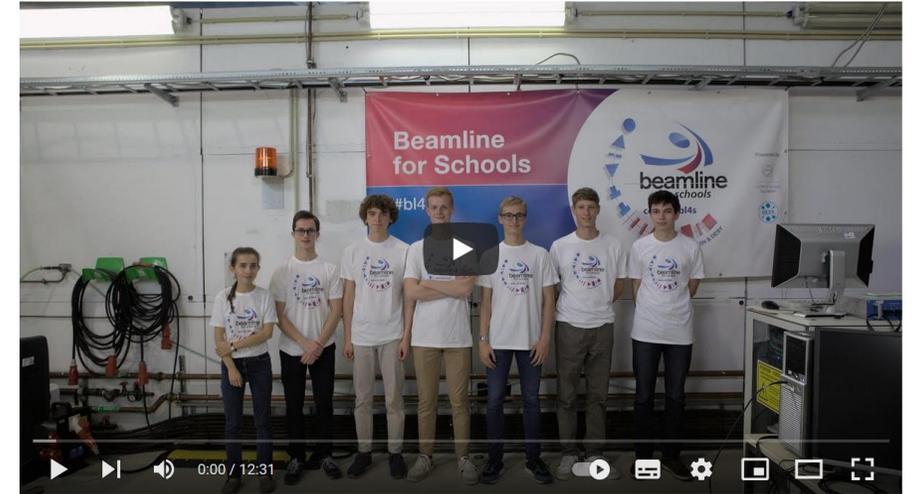


***Return your dosimeter,
CERN card, and lunch
check to Sarah & Markus!***

It's just the beginning ...

BL4S will not be over on 26 September

- ❖ Continue analysing the data you will collect
- ❖ Write a **report** about your experience at CERN that can be published on the BL4S website
- ❖ Write a **scientific paper** about the results of your experiment ⇒ We will help you publishing it in a scientific journal!



Share your
experience
with others!



It was a great pleasure to meet you and to conduct experiments with you all! :)

We will miss you very much!



And most importantly: Thank you so much to our **support scientists** for all your **time, kindness, and endless patience and passion!**

We wish that you can catch up on sleep!

Thank you so much to all our fantastic supporters!

