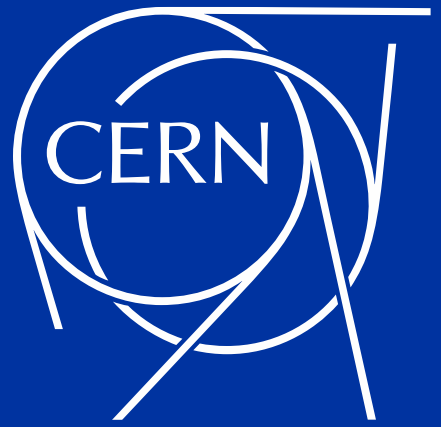
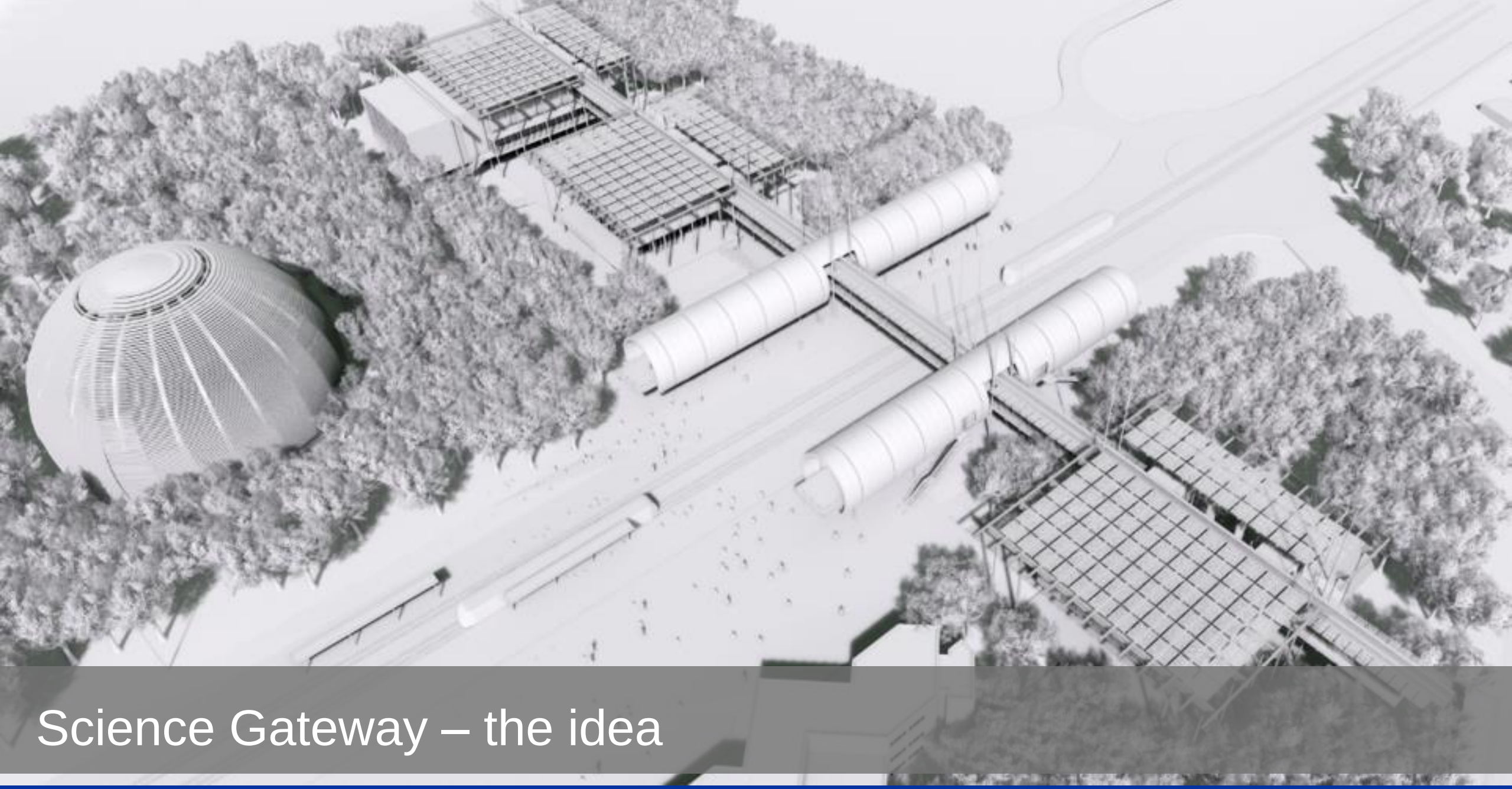


Update: Science Gateway Education

Julia Woithe | TSF 22 March 2022 | sciencegateway.education@cern.ch



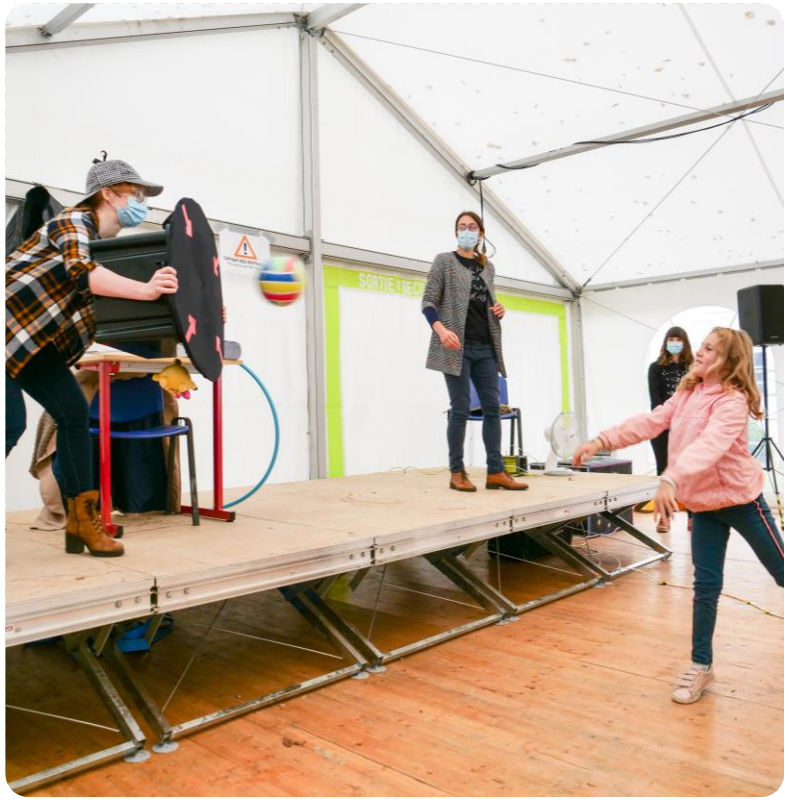
Science Gateway – the idea

Science Gateway taking shape – 13 January 2022

Science Gateway Education

Labs
Discover your inner scientist

Science Shows
Explore the stories of discoveries



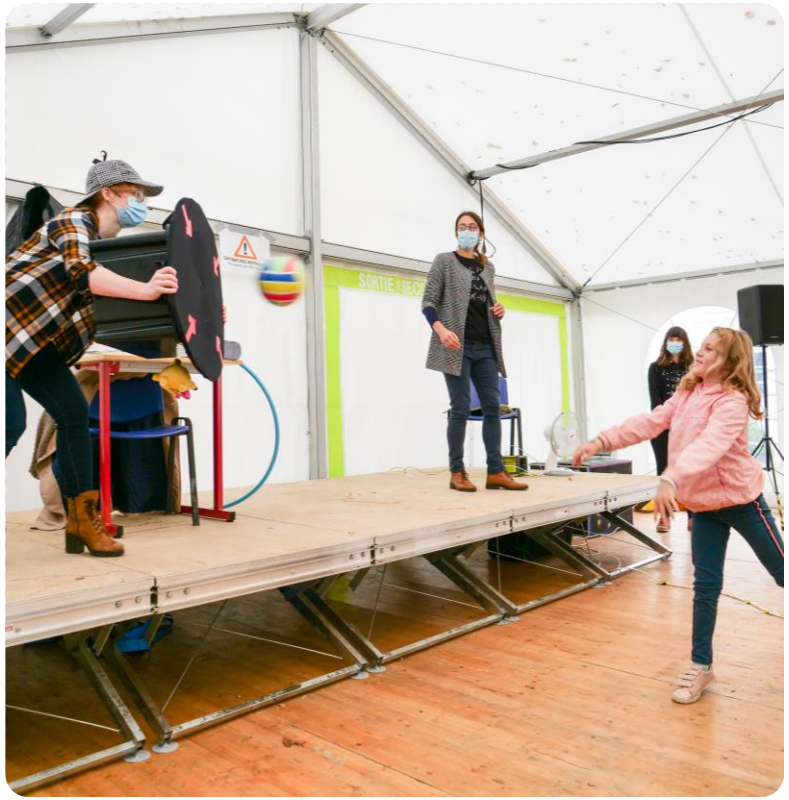
Online Learning
Engage online to find out more

Science Gateway Education

Labs
Discover your inner scientist

- 45-90 min workshops in different languages & tailored to age groups
- Focus on independent hands-on experimentation and teamwork
- Two lab spaces for each 24 participants

Science Shows
Explore the stories of discoveries



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Science Shows
Explore the stories of discoveries

- 30-45 min shows tailored to an international audience and different age groups
- Focus on surprising demonstrations and interactive storytelling
- Auditorium for 200+ people

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Patrick Thill

Science Shows
Explore the stories of discoveries

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- Focus on surprising demonstrations and interactive storytelling
- Auditorium for 200+ people

Anja Kranjc Horvat

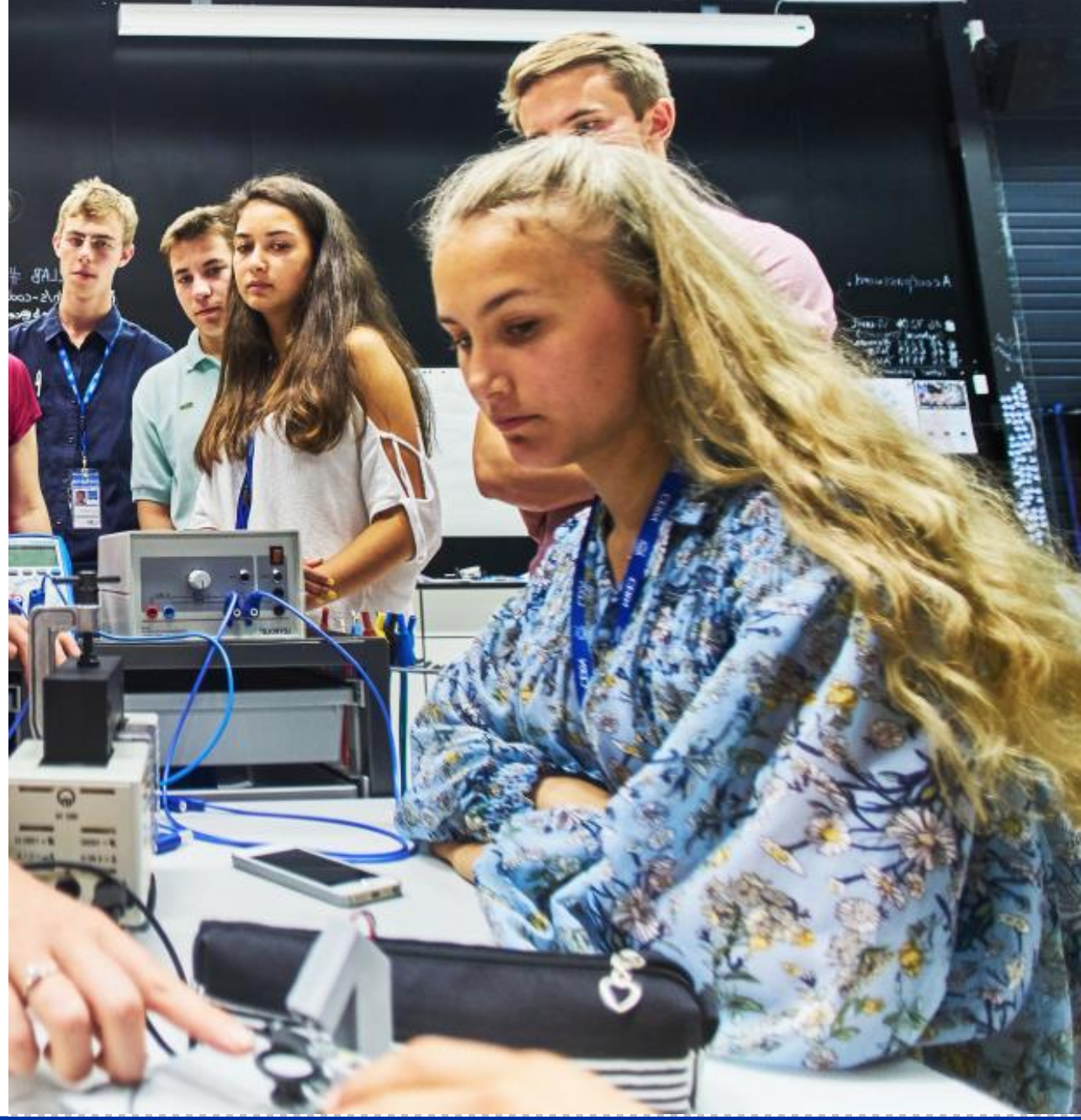
Online Learning
Engage online to find out more

- Videos with quiz questions, DIY experiments, material for educators
- Focus on independent learning
- Material in English and French

Guillaume Durey

Educational Goals

- Creating memorable positive impressions related to STEM (science, technology, engineering and math)
- Fostering positive attitudes towards STEM, STEM professionals and STEM careers
- Raising awareness and understanding of nature of science, scientific methods, concepts and technologies
- Promoting the value of fundamental science



Design principles of education activities

- **Authenticity:** using the unique atmosphere to bring learners in contact with topics that are linked to CERN, using authentic research equipment under guidance from volunteers from CERN's scientific community

- **Hands, head & heart:** actively involving participants physically through hands-on manipulation, cognitively through surprising observations and educational explanations, and affectively through creating positive experiences with science and scientists

- **Empowerment:** enabling participants of all ages and backgrounds to engage in science, empowering them to do more than they thought they can and showing that science is for everyone

Topics

- Detectors & sensors: making the invisible visible
- Accelerators & magnets: manipulating particles
- Information Technology: creating a unique computing infrastructure
- Engineering: making the impossible possible
- Theory: rationalising, predicting and explaining phenomena
- Data reconstruction & analysis: making sense of observations
- Technology: manipulating robots, vacuum and cryogenics
- Applications: bringing CERN’s technologies into our everyday life
- Scientific methods, models and nature of science: doing science
- STEM careers: exploring STEM occupations and workplaces

Science Shows

Anja Kranjc Horvat

Science Shows Development

Updating existing shows based on audience and demonstrator feedback
Fun with Physics, Detection: Antimatter Show, Technology: Superconductors Take Off!

IT: Computing Technology and Data Analysis
Big data, trigger system, data storage and analysis, …

Theory vs Experiment: Quantum Physics
Light phenomena, quantum computing …

Science show evaluation protocol to support continuous development
PhD project starting in April 2022

Online Learning

Guillaume Durey

Overview of the Solvay Education Programme

level 1

Online social media education content

- Reach 1.3 million views per year via CERN social media
- Goal: to trigger STEM interest
- 25 short videos per year

level 2

Online course for high-school students

- 10 000 participants per year from around the world
- Goal: to develop interest in STEM
- 6 course chapters per year, 10-20 min explainer videos

level 3

On-site camp for high-school students at CERN

- 30 participants per year from around the world
- Goal: to build confidence & transform STEM interest
- 1 camp per year (1st camp in 2023, 2 camps in 2024)

Labs

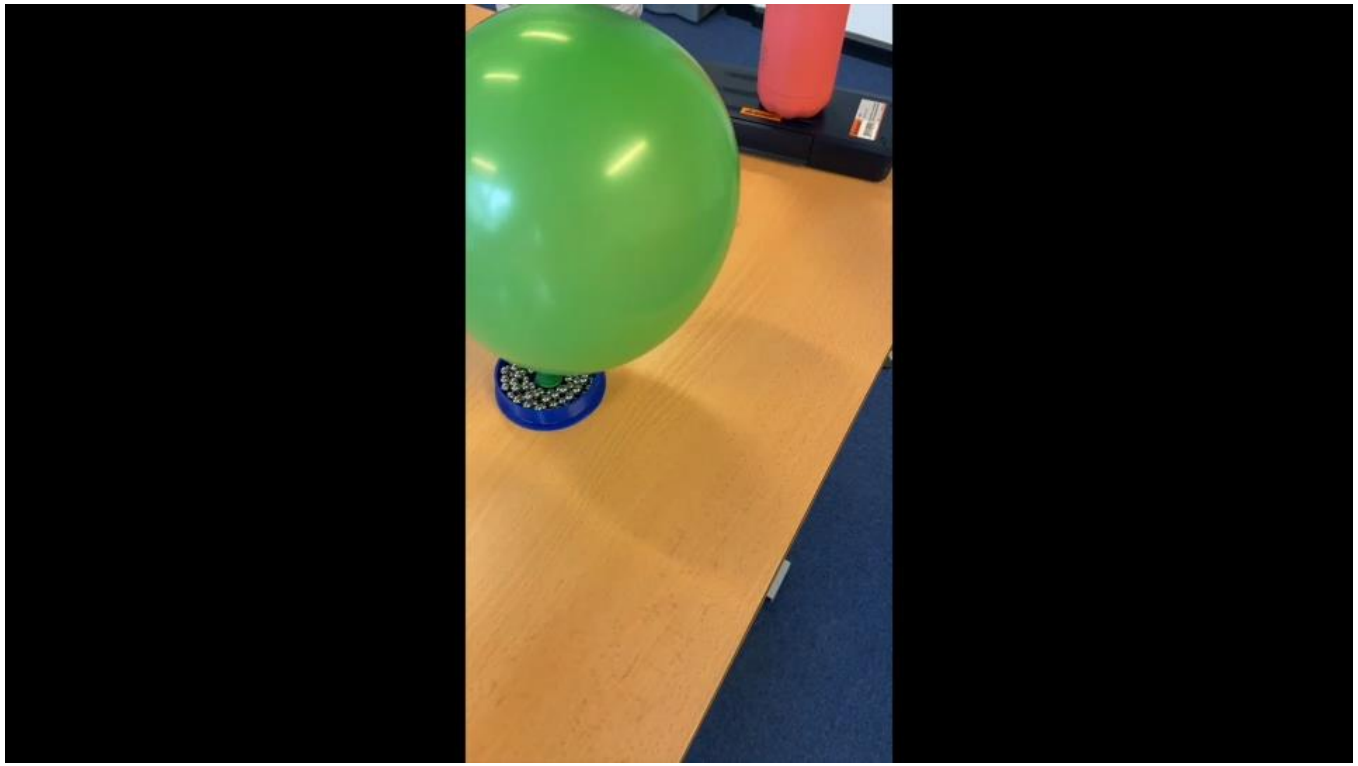
Patrick Thill

Engineering: How do we move the CMS detector?

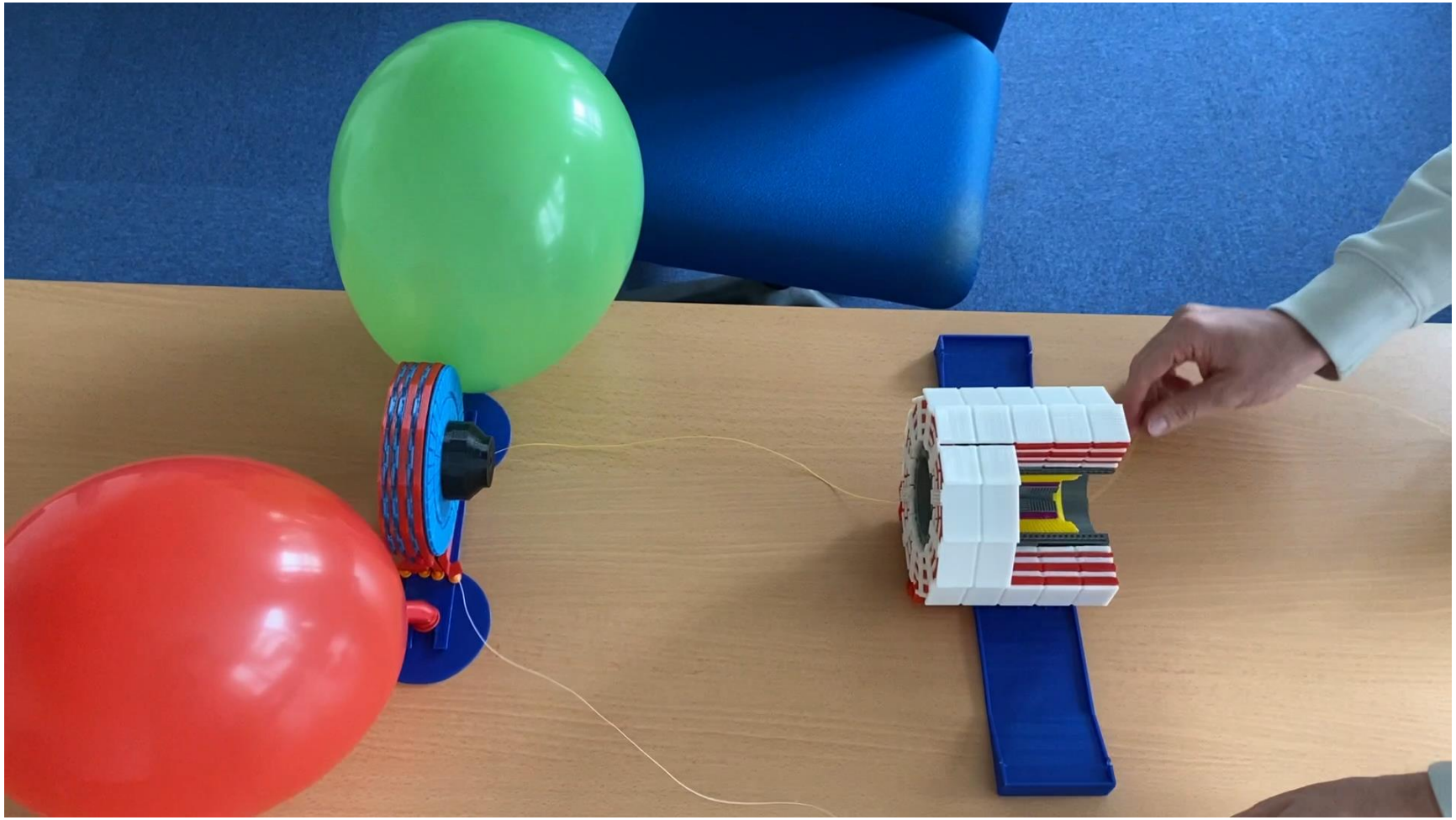
Engineering: ‘The power of air’

CMS air pad

Lab air pad in action

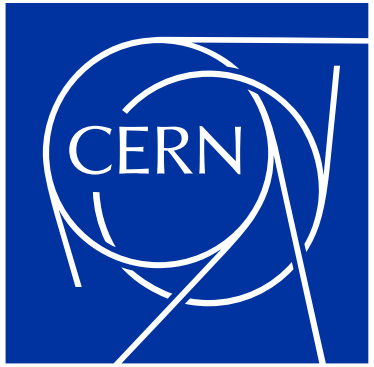


Engineering: ‘The power of air’



Thank you for your attention

Let‘s discuss!



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