



Beamline for Schools 2021

A Physics competition for high-school students

Margherita Boselli – Teacher and Student Forum

March 23 2021

BL4S (a reminder)

Goal: bringing young people close to particle physics and to fundamental research through the development of an original experimental project to be performed at a testbeam facility.

- 5-9 people per team, ≥ 16 years old (for winners, September 2021).
- Proposal submission deadline: **April the 15th** at Midnight CET.
- The best 2 proposals: teams invited at DESY to perform their experiments.
- The best ~20 proposals will receive additional prizes (kit for DIY particle detectors).
- Special award for the best video.
- Winner announcement June 2021.
- Participation certificates for all participants.



BL4S (a reminder)

The BL4S core team in 2021:

- **Margherita Boselli**, project manager, CERN
- **Markus Joos**, technical coordinator, CERN
- **Cristovao Beirao da Cruz e Silvia**, Support Scientist, CERN.
- **Paul Schuetze**, Support Scientist, DESY.

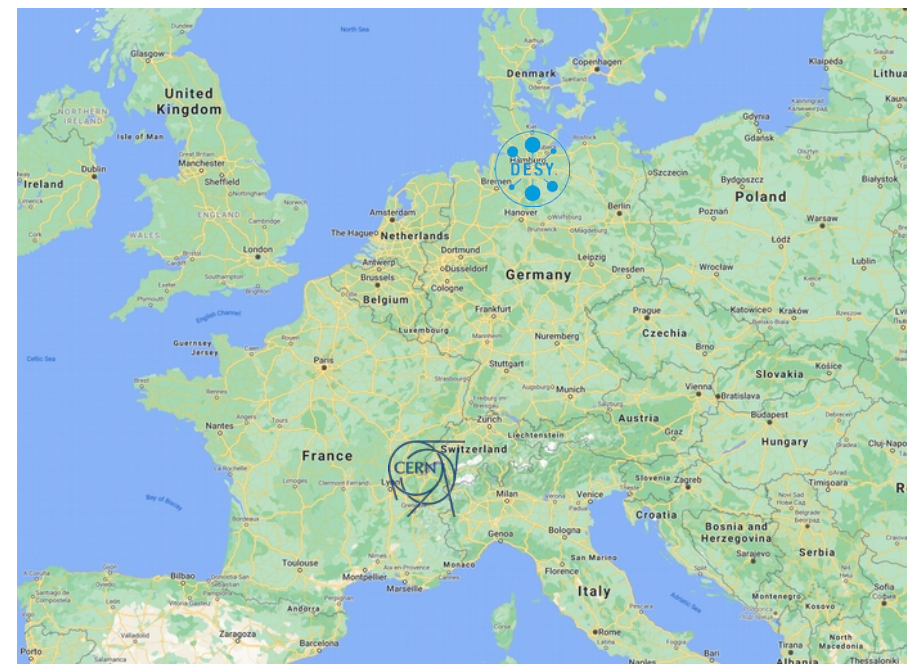
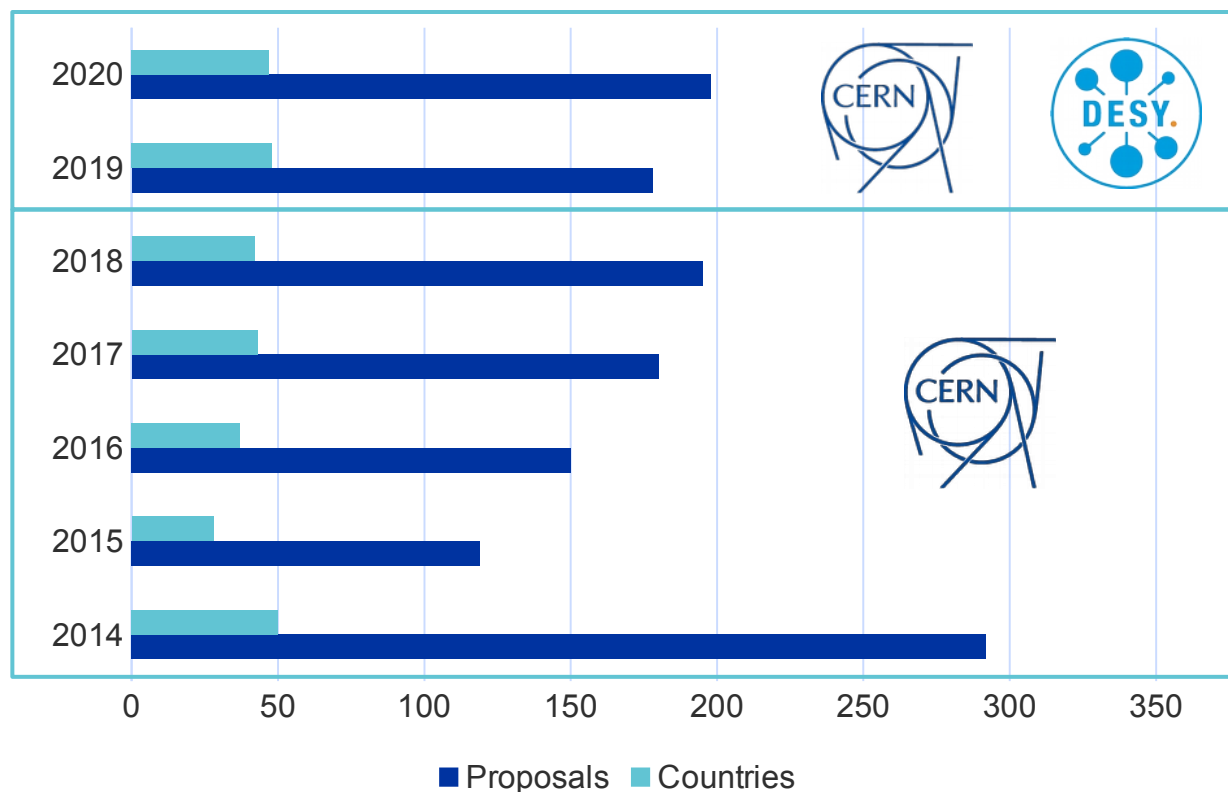
We can count on 48 supporters from different countries, the National Contacts.

40 scientists from both CERN and DESY are part of the evaluation team.

The competition is partially funded by external sponsors. The supporters of 2020 should confirm in 2021.

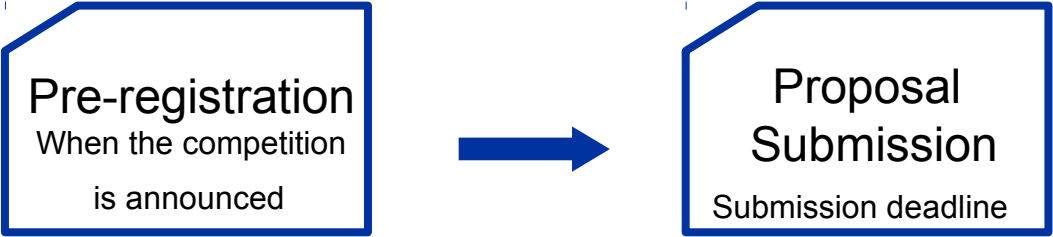


Overview



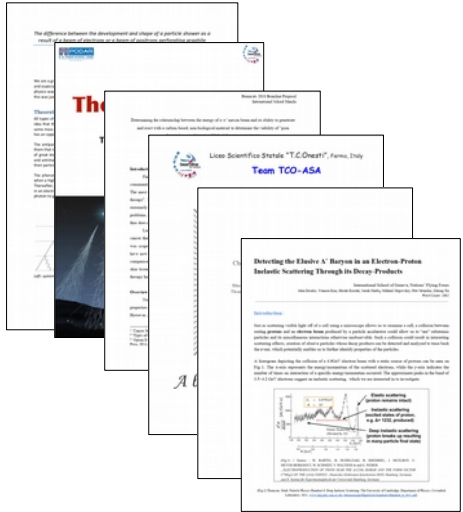
- More than 11000 students from 91 different countries took part in the competition from 2014 on.
- 4 winning teams published their results in peer-reviewed scientific journals. Two more articles in preparation.

Participation in BL4S 2021



292 from 63 countries

- The pre-registration is not mandatory for subscribing to the competition.
- It is useful to get information and get in contact with our team.
- In 2020, on March the 23rd : 312 pre-registrations from 70 countries.
- In 2021: 292 pre-registrations from 63 countries.
- The country distribution (teams per country) is more even in 2021 than in 2020.

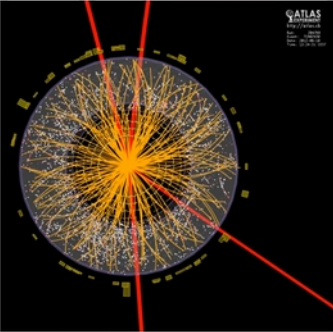


Online events for pre-registered teams

- Two online events aiming at introducing the pre-registered teams to the particle physics research and encouraging them to send a proposal.


CERN and its research

Decay of a Higgs particle in a detector


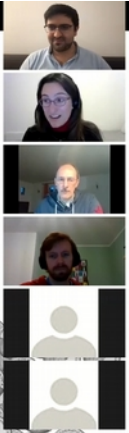


Every second 800 million pairs of protons collide inside of a detector (ATLAS or CMS)

Only one Higgs event is expected for 1,000,000,000,000 collisions



41 coins

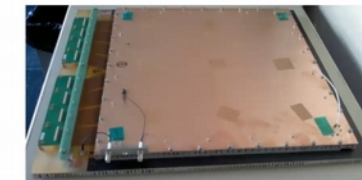
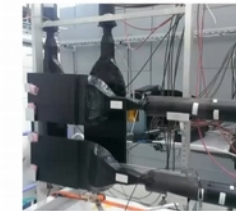


19

BL4S Q&A

Detectors

- Scintillators + photomultipliers – particle counting, trigger, TOF measurements. At least 6 available.
- Delay Wire Chamber – 2D tracker – active area 10x10 cm, resolution 200-300 μm (10^{-6} m), dead-time~700 ns.
- MicroMegas detectors – 1D tracker – 40x40 cm, resolution 200 μm . 4 available
- Beam telescope – 2D tracker – 2x1 cm, resolution 3 μm .
- Lead crystal calorimeter – Energy of particles – 16 available, 10x10x37 cm, energies > 500 MeV.



- More than 150 people took part in each event, the participants were divided in 3 sessions.

Perspectives

- We don't know how the pandemics will affect the participation and the beam-time with the winners.
- We might be prepared to face travel restrictions.
- We are starting to discuss about the 2022 edition of the competition.
- Constant work to keep alive the alumni network and advertize this educational offer.

Questions ?





Thanks for you attention