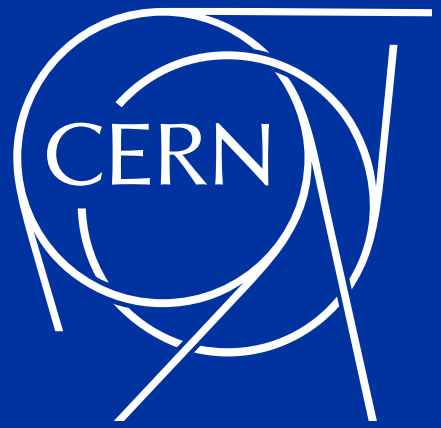


Particle Physics Online Course for High-School Students

Teacher and Student Forum – Ninth Meeting

8 December 2020

Particle Physics Course for High-School Students

Motivation: high demand for educational offers targeting high-school students

Goals:

- develop online learning offer for high-school students from around the world
- provide teachers with educational ideas and materials for their classroom
- narrow the research-practice gap in particle physics education research

Particle Physics Course for High-School Students

Target group: high-school students (14-19 years)

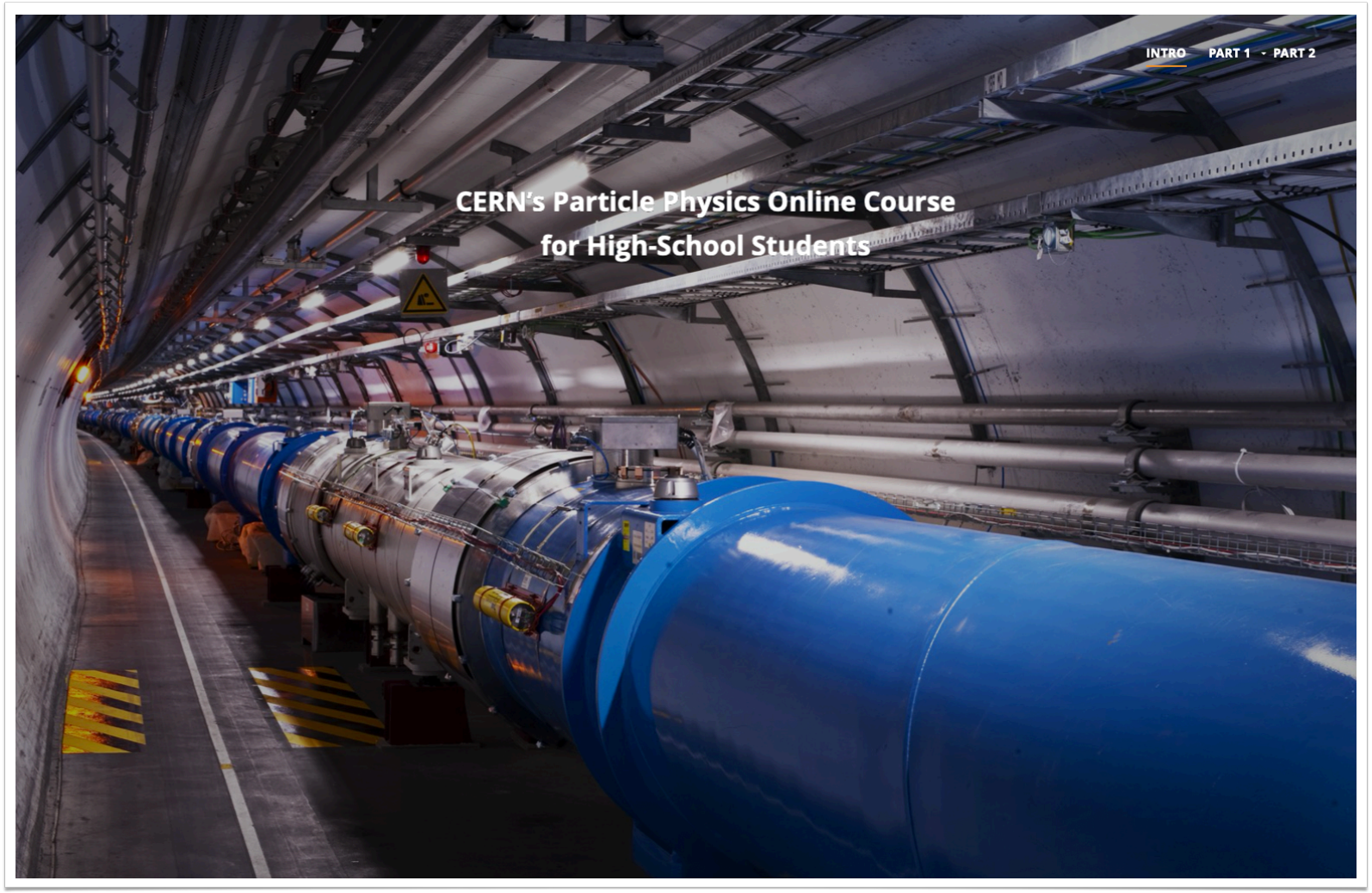
Aim: introducing students to central models of particle physics

Course: 16 chapters comprising videos/transcripts and quiz questions

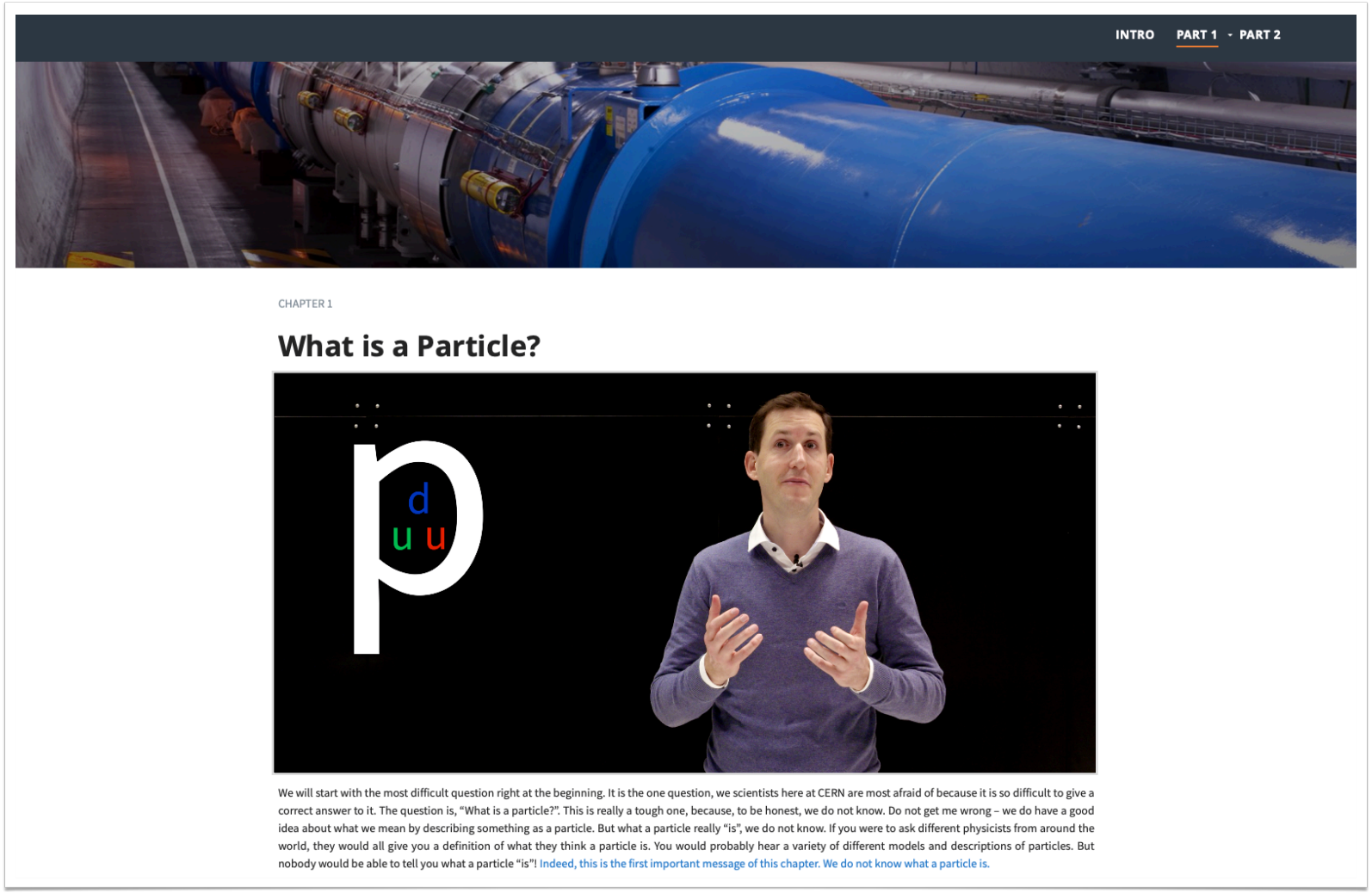
Structure: key messages and experiments/activities

Part 1		Part 2	
1 What is a particle?	**5** What are interactions?	**9** What is antimatter?	**13** What is a particle accelerator?
2 What is a model?	**6** What is matter?	**10** What is the SMPP?	**14** What is a particle detector?
3 What is particle physics?	**7** What are conservation laws?	**11** What is the Higgs boson?	**15** What is a cloud chamber?
4 What are charges?	**8** What are particle transformations?	**12** What is beyond the SMPP?	**16** What is CERN?

Particle Physics Course for High-School Students



Particle Physics Course for High-School Students



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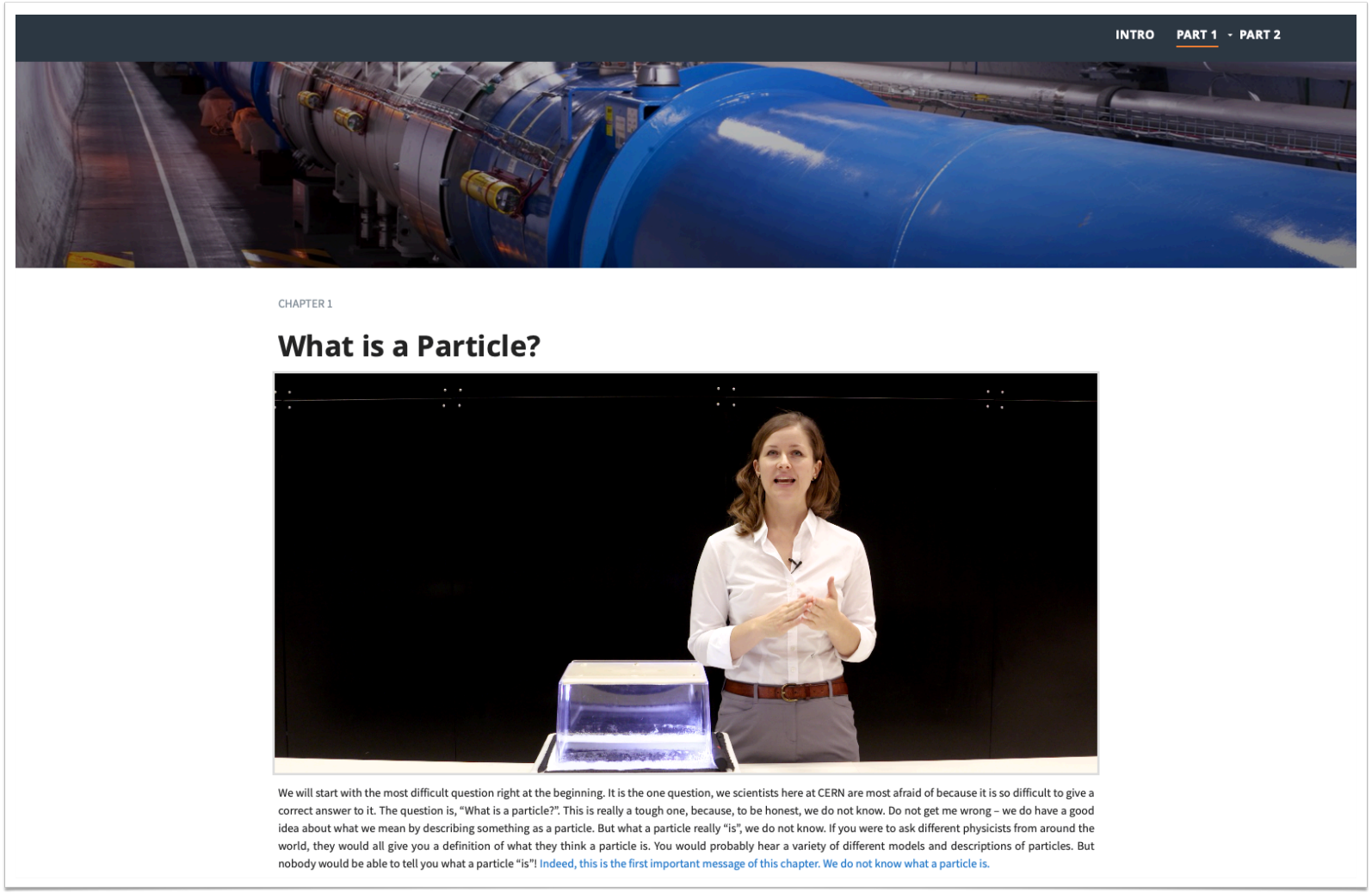

Particle Physics Course for High-School Students

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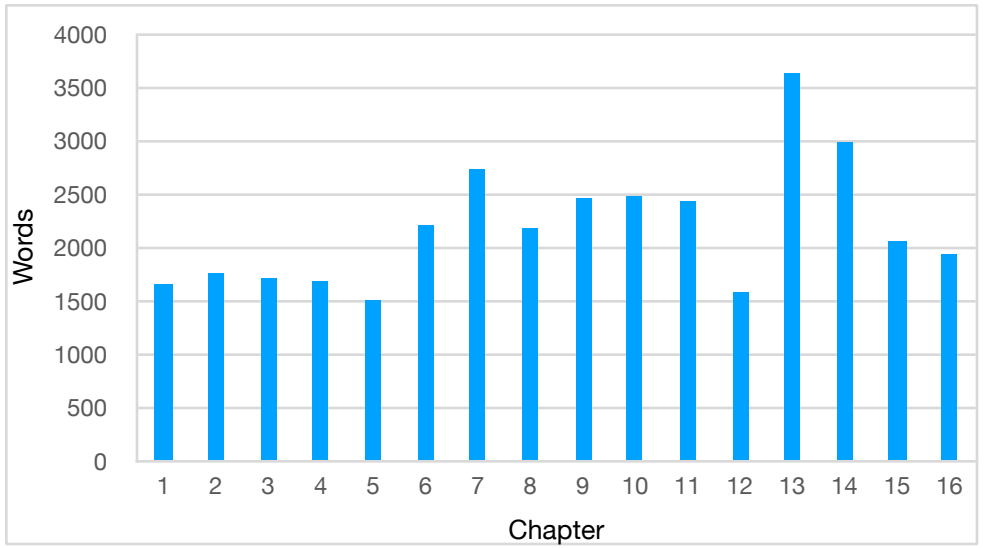

- **Videos lasting between 10-25 minutes**
- **Each chapter ends with 4-6 quiz questions**

Total course duration: 4-5 hours

Next steps

Complete initial version with 16 chapters and 80 quiz questions early next year

Perform design-based research to further develop individual chapters

Transform quiz questions into a Research-Based Assessment Instrument (RBAI)

Long-term planning

Create different language versions

Add additional chapters and different levels

Use the course as application step for residential student programmes at CERN

Merci bien!

Questions?

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