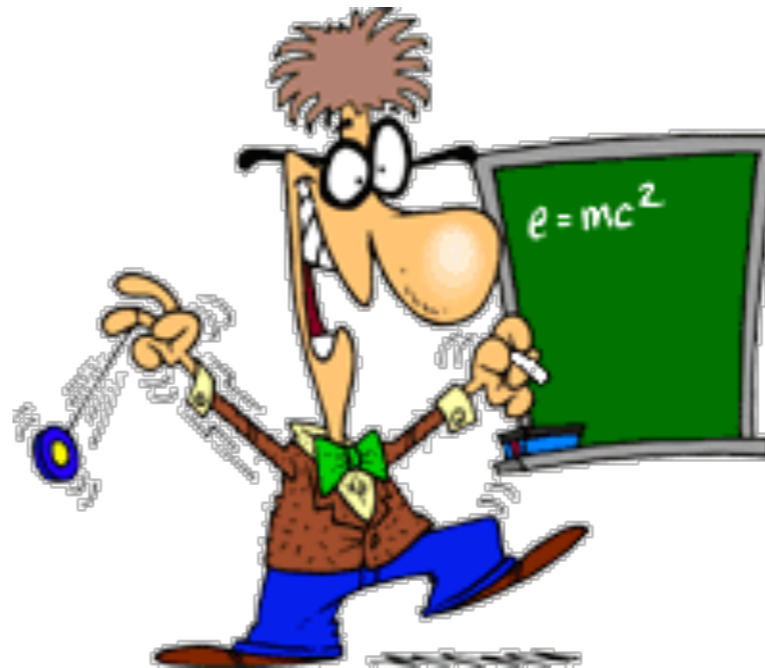


CERN Summer Student Lecture Program 2019

Thierry Gys
Andrea Wulzer

on behalf of the SSLP committee



Goals

With these lectures we should:

- Give an overview of what we do at CERN and why
- Teach some physics/statistics/computing/engineering/...
- All this, to a varied audience.

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Aim is not to teach you how to e.g. build an accelerator.

We give you basic **concepts** and **ideas**, to further stimulate your interest in science.

Programme Overview

A simple scheme ...



Accelerator

Particle Accelerators and beam dynamics
Accelerator technology challenges
Future high-energy collider projects

Detectors

Detectors
Electronics, DAQ and triggers

Experiment

Particle World
From raw data to physics results
Experimental physics at hadron colliders
Experimental physics at lepton colliders
Physics and medical applications
Heavy Ions
Nuclear Physics at CERN
Flavour Physics
Antimatter in the lab

Theory

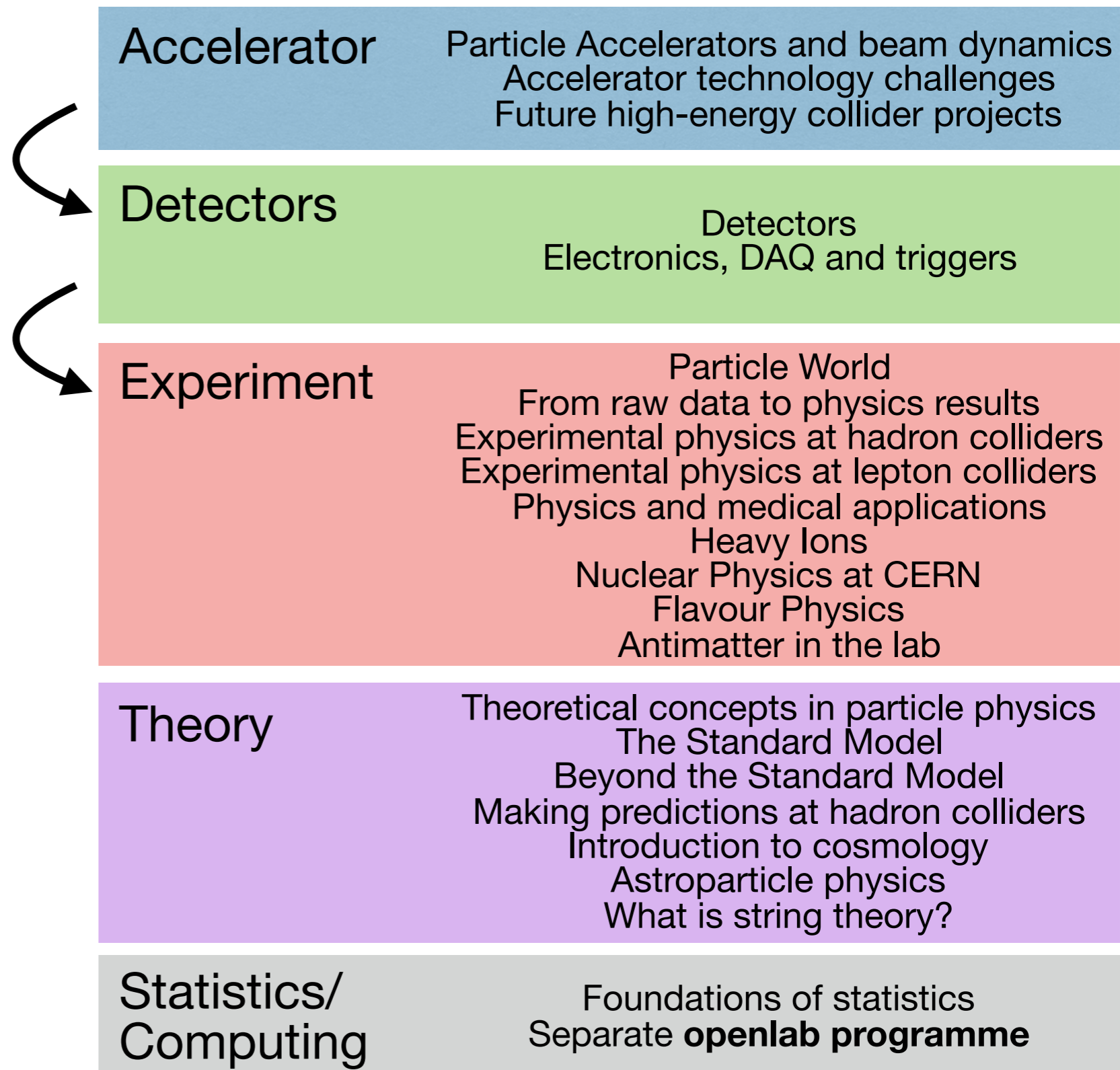
Theoretical concepts in particle physics
The Standard Model
Beyond the Standard Model
Making predictions at hadron colliders
Introduction to cosmology
Astroparticle physics
What is string theory?

Statistics/ Computing

Foundations of statistics
Separate **openlab programme**

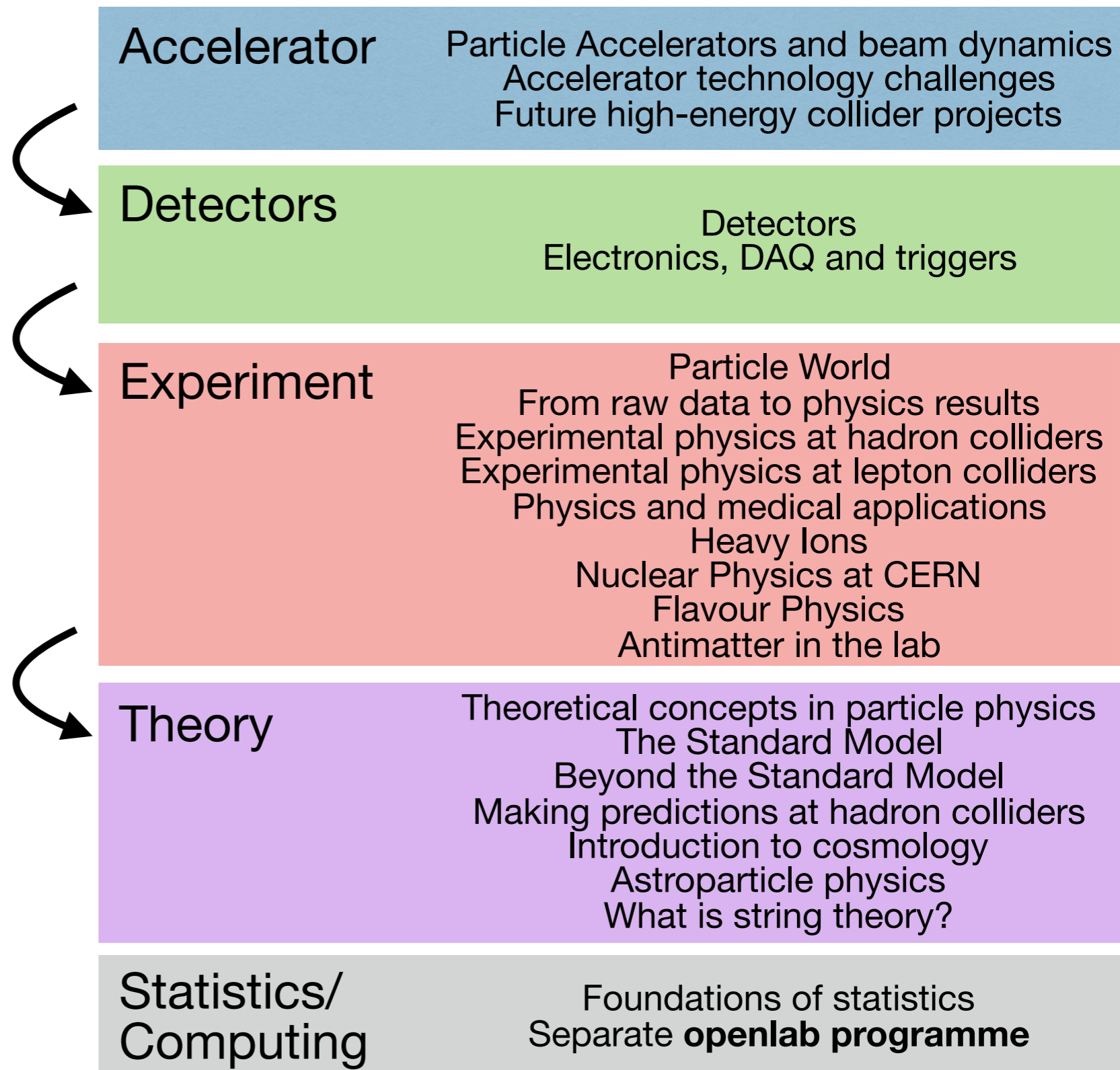
Programme Overview

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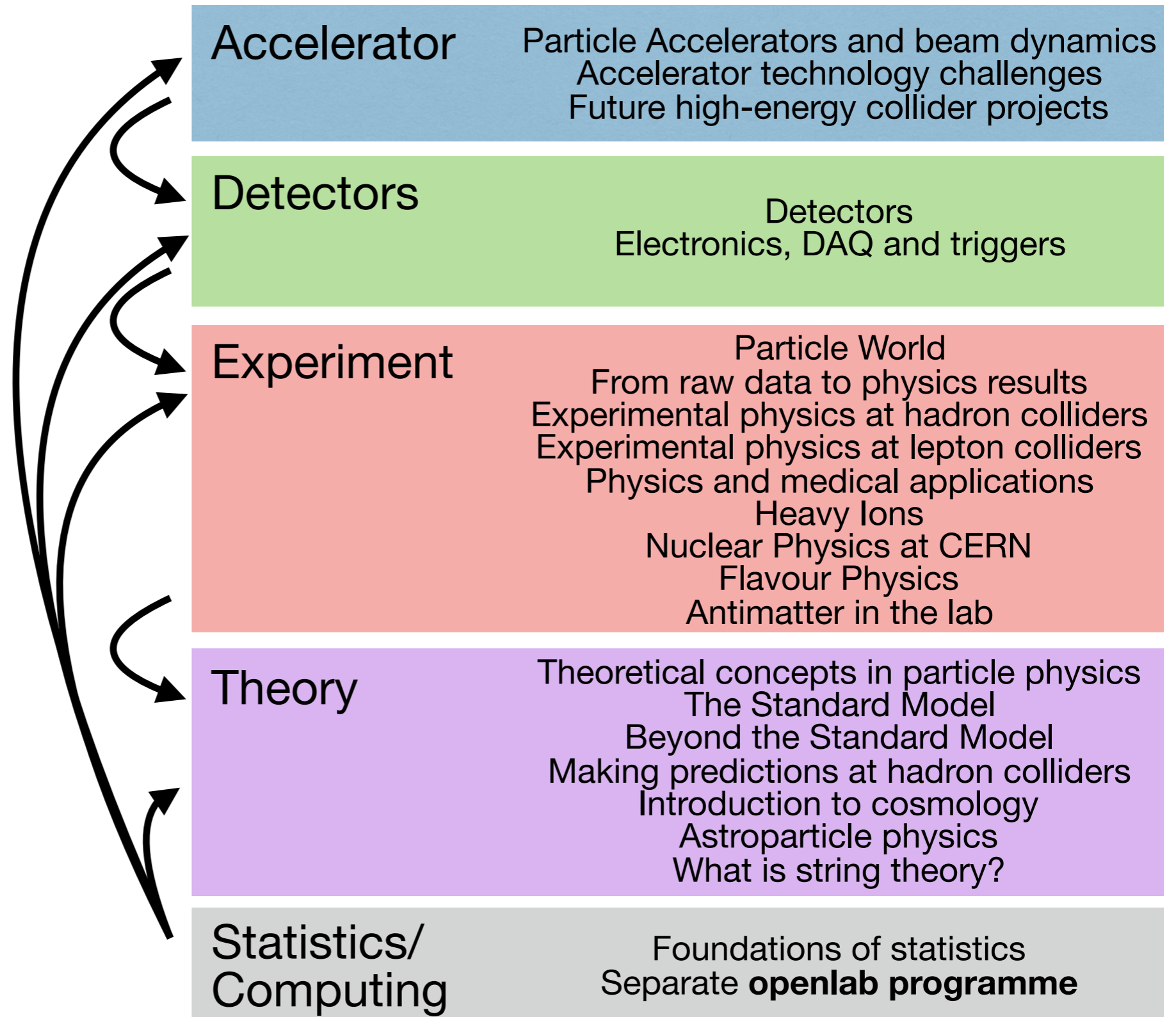
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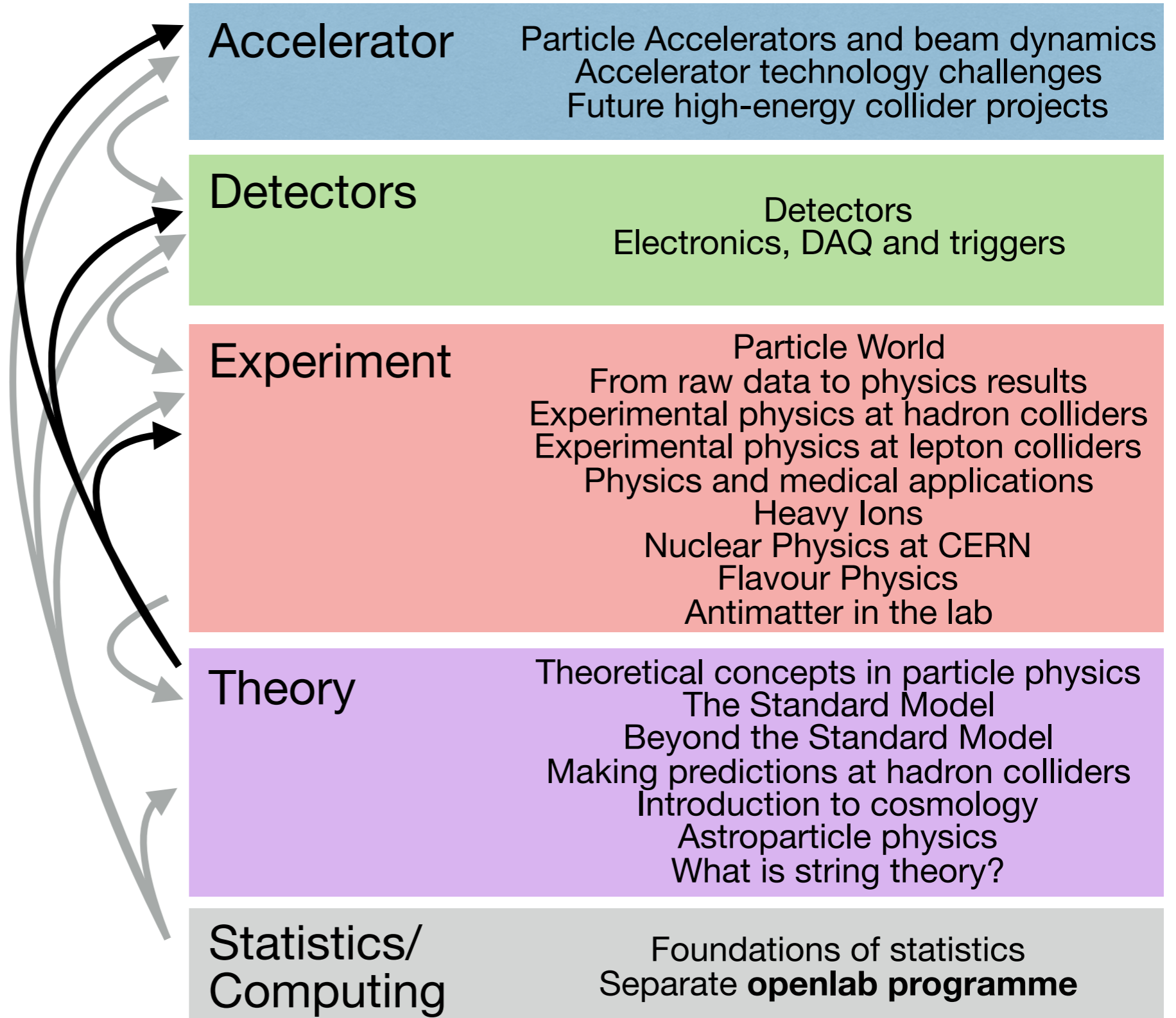
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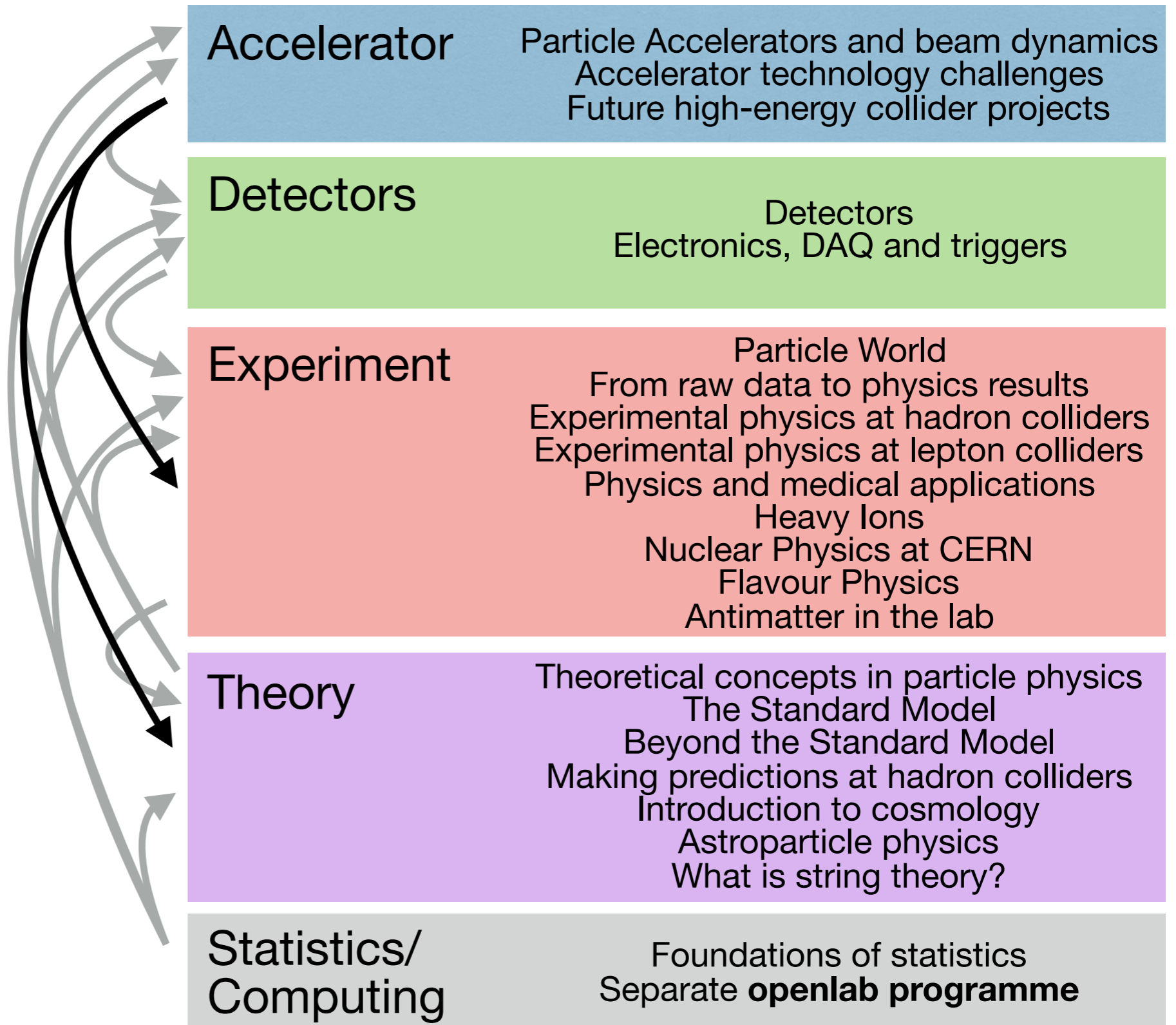
Programme Overview

A simple scheme ...
... however ...



Programme Overview

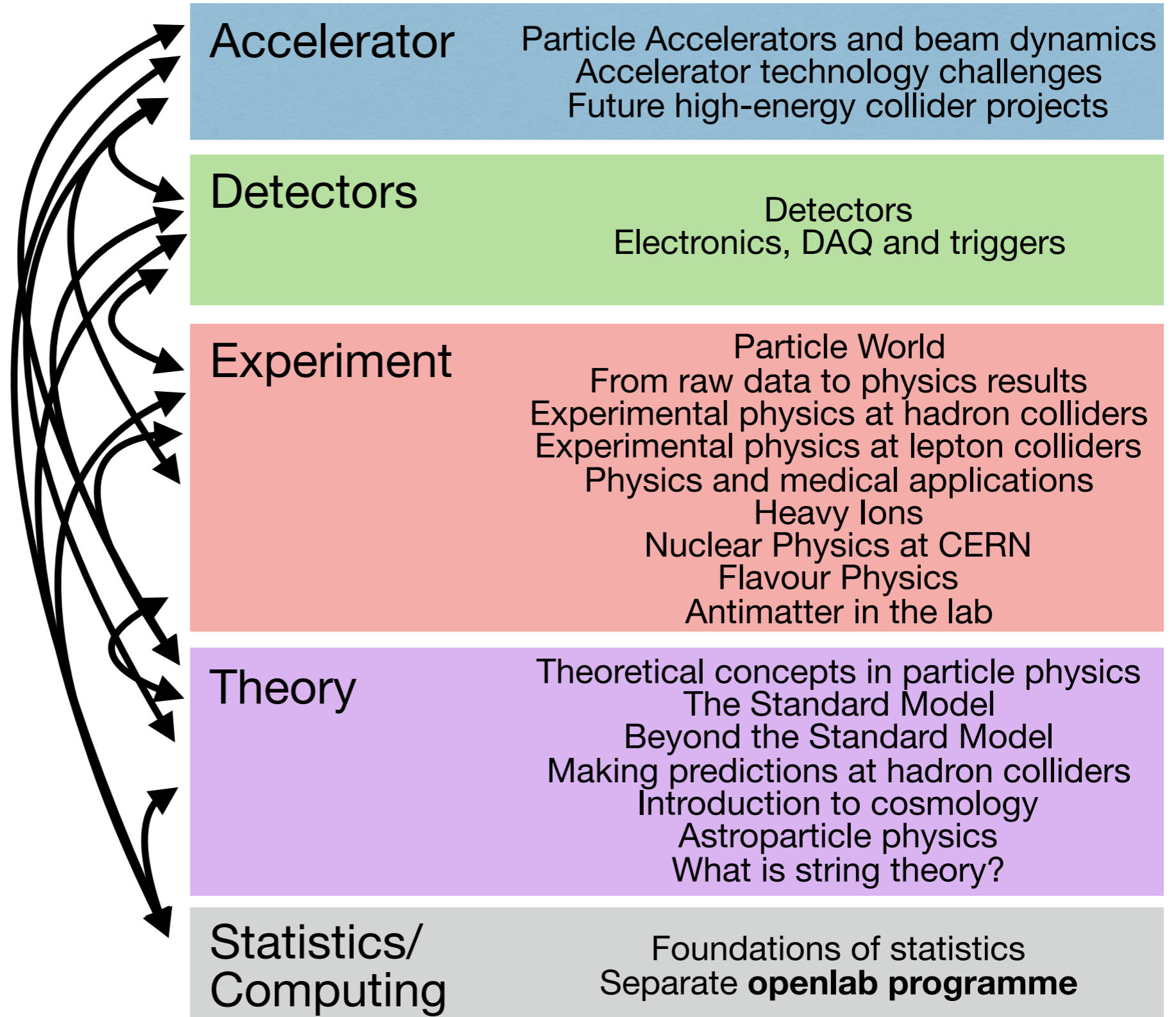
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Programme Overview

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... however ...

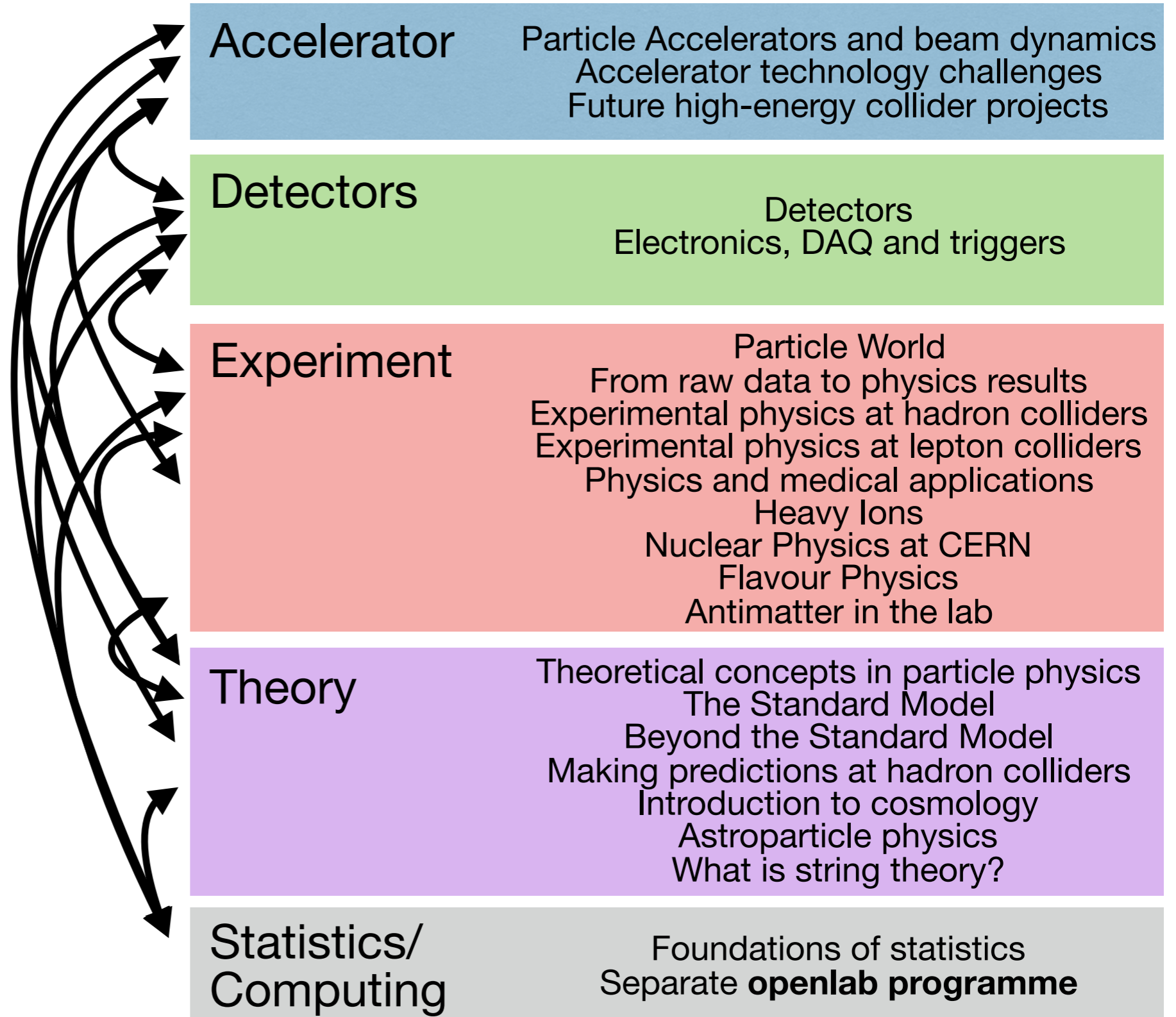


Programme Overview

A simple scheme ...

... however ...

All subjects are
inextricably linked



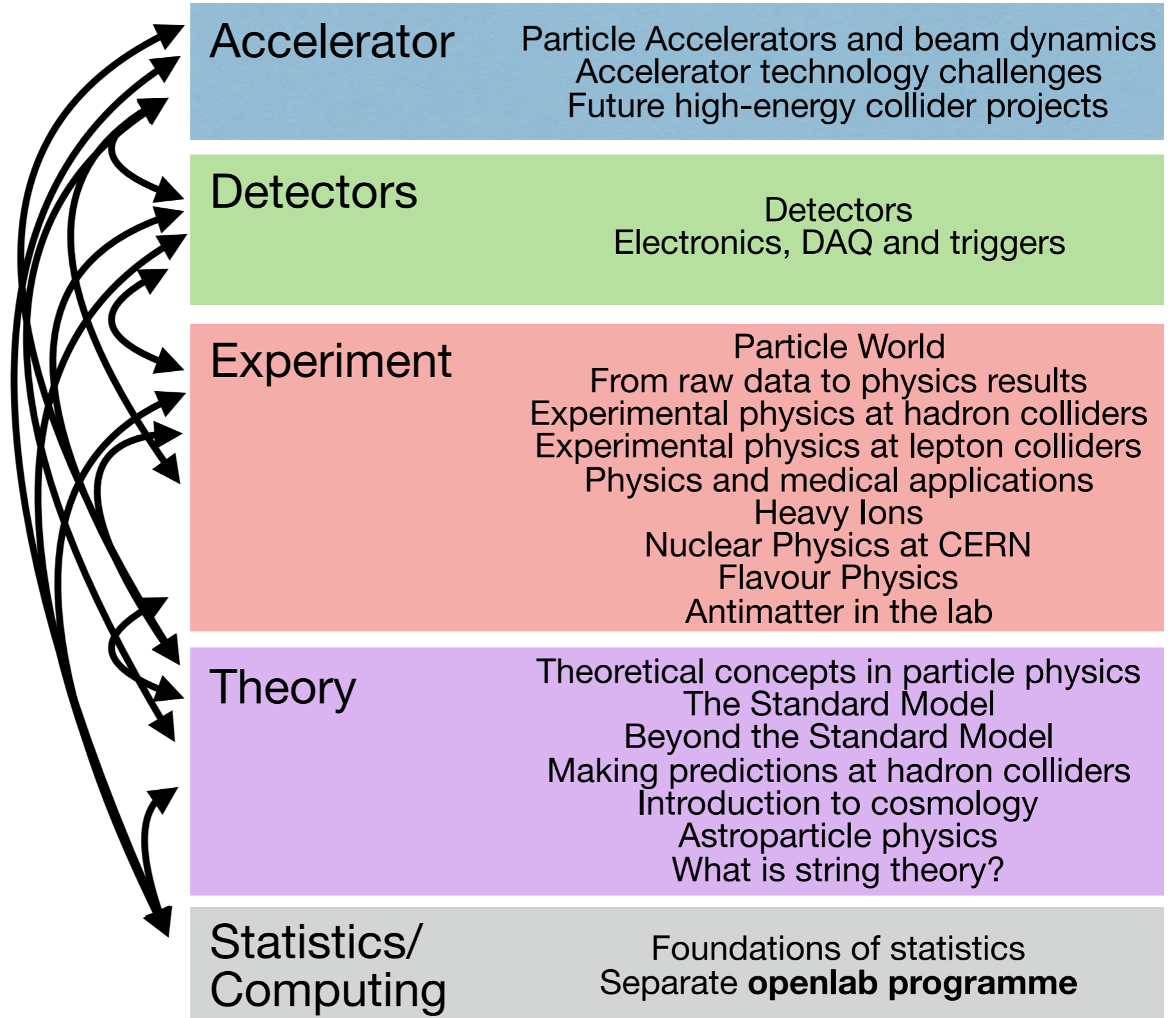
Programme Overview

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CERN is great because
it brings them together



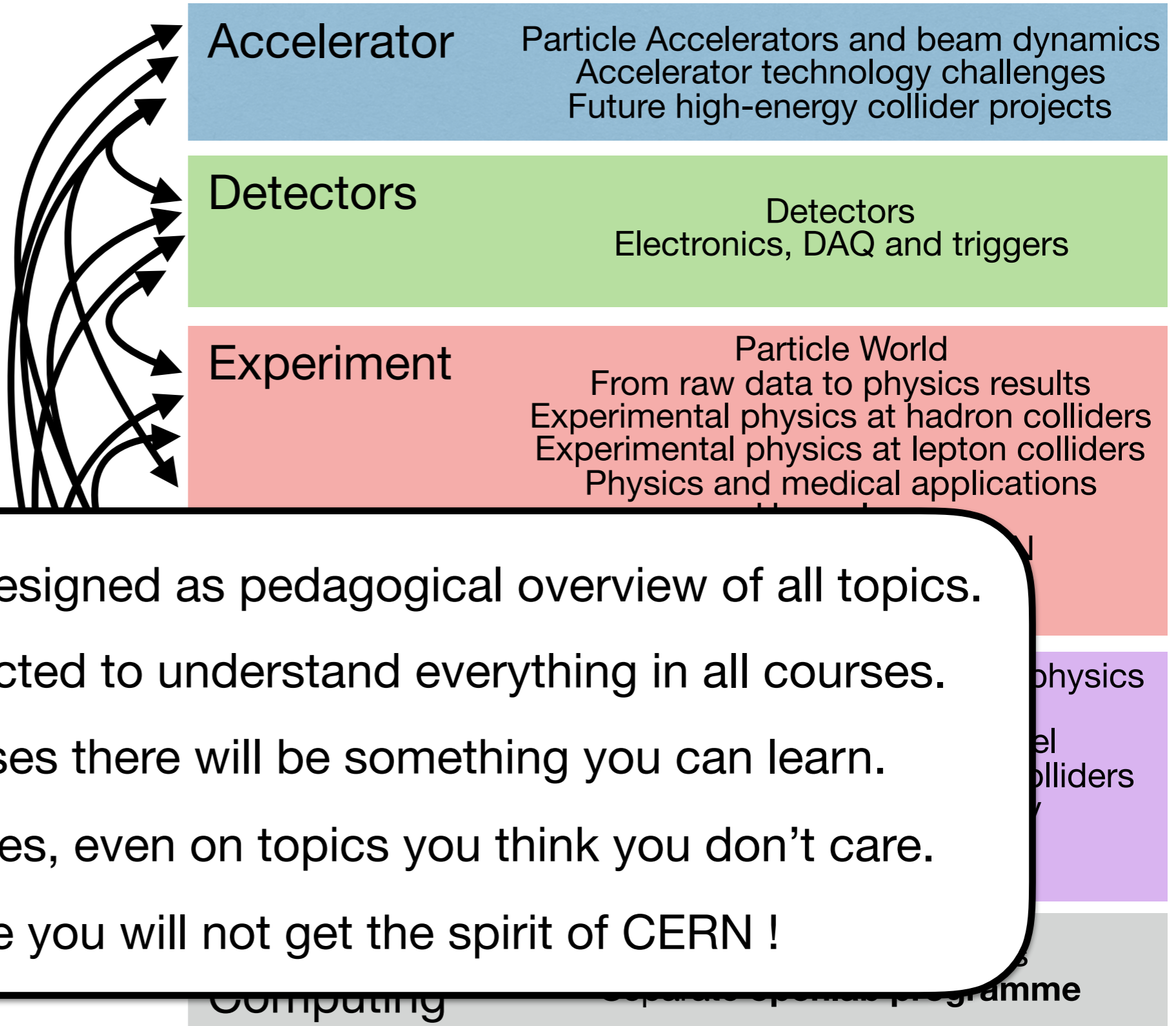
Programme Overview

A simple scheme ...

... however ...

All subjects are
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CERN is great because
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Lecture program designed as pedagogical overview of all topics.

You are not expected to understand everything in all courses.

But in all courses there will be something you can learn.

Attend the lectures, even on topics you think you don't care.

Otherwise you will not get the spirit of CERN !

Practical Information

Lectures every morning at **9:15**, **10:25**, **11:35**, here (Main Auditorium)

- lectures are 45'
- followed by 10' questions (stay in the room !)
- and by 15' coffee break

Use back door if you are late

Follow lecture actively

- unfortunately there is WiFi in the room, don't get distracted !
- try the exercises the lecturer may propose
- **ASK QUESTIONS!** lecturers love that, there are no stupid questions!

Lecture slides and recording available online [<https://indico.cern.ch/category/345/>]

Instructions in backup

Practical Information

Feedback Questionnaire !!

You will be asked to fill one (anonymous) questionnaire for each course.

DO THAT !

Your evaluation is carefully reviewed by the SSLP committee.
Helps us a lot to improve the program.

Practical Information

The SSLP committee:

Eszter Badinova (HR)	Kfir Blum (TH)
Adriana Bejaoui (HR)	Francesco Cerutti (EN)
Ana Dordevic (HR)	Maria Girone (IT)
	Richard Hawkings (EP)
	Bernhard Holzer (BE/ABP)

The SSLP committee chairs

Thierry Gys (EP) thierry.gys@cern.ch
Andrea Wulzer (TH) andrea.wulzer@cern.ch

For administrative and scheduling questions: summer.student.info@cern.ch

More introduction to follow ...

09:00 → 09:15 **Welcome and Introduction to Lecture Programme** ⌚ 15m

Speakers: Andrea Wulzer (CERN and EPFL), Thierry Gys (CERN)

09:15 → 09:20 **Introduction to openlab lectures** ⌚ 5m

Speaker: Kristina Gunne (CERN)

09:20 → 09:40 **Computer Security at CERN** ⌚ 20m

Speaker: Sebastian Lopienski (CERN)

09:40 → 09:50 **Library Service** ⌚ 10m

Speaker: Salome Alexandra Rohr (CERN)



SS_presentation_2...



SS_presentation_2...

09:50 → 10:10 **Summer Student Workshops** ⌚ 20m

Speaker: Niko Neufeld (CERN)

More introduction to follow ...

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Speaker: Niko Neufeld (CERN)

Summer Student Lecture Programme Course

Presentation by the CERN Director for Research and Computing

by Eckhard Elsen (CERN)

📅 Monday 8 Jul 2019, 11:35 → 12:30 Europe/Zurich

📍 500/1-001 - Main Auditorium (CERN)

Enjoy CERN, your project, and the lectures !!

Backup Slides

Indico Page

[<https://indico.cern.ch/category/345/>]

Summer Student Lecture Programme Course

click to expand

There are 59 events in the future. [Show](#)

June 2018

- 29 Jun [Eckhard Elsen, "Presentation by the CERN Director for Research and Computing"](#)
- 29 Jun [Verena Kain, "Particle Accelerators and Beam Dynamics \(3/3\)"](#)
- 29 Jun [Andreas Hoecker, "Foundation of Statistics \(4/4\)"](#)
- 28 Jun [Verena Kain, "Particle Accelerators and Beam Dynamics \(2/3\)"](#)
- 28 Jun [Andreas Hoecker, "Foundation of Statistics \(3/4\)"](#)
- 28 Jun [Tara Shears, "Particle World \(3/3\)"](#)
- 27 Jun [Verena Kain, "Particle Accelerators and Beam Dynamics \(1/3\)"](#)
- 27 Jun [Andreas Hoecker, "Foundation of Statistics \(2/4\)"](#)
- 27 Jun [Tara Shears, "Particle World \(2/3\)"](#)
- 26 Jun [Andreas Hoecker, "Foundation of Statistics \(1/4\)"](#)
- 26 Jun [Tara Shears, "Particle World \(1/3\)"](#)
- 26 Jun [Introduction Presentation](#)

click

There are 1656 events in the past. [Show](#)

Indico Page

Example from past year:

Summer Student Lecture Programme Course

Particle World (1/3)

by Tara Shears (University of Liverpool (GB))

Tuesday 27 Jun 2017, 10:30 → 11:25 Europe/Zurich

500-1-001 - Main Auditorium (CERN)



intro_pp_17.pdf



prerequisites.pdf



Recording

Slides.
Available shortly
before the lecture.

Video.
Available shortly
after the lecture.