

Plans for CDR

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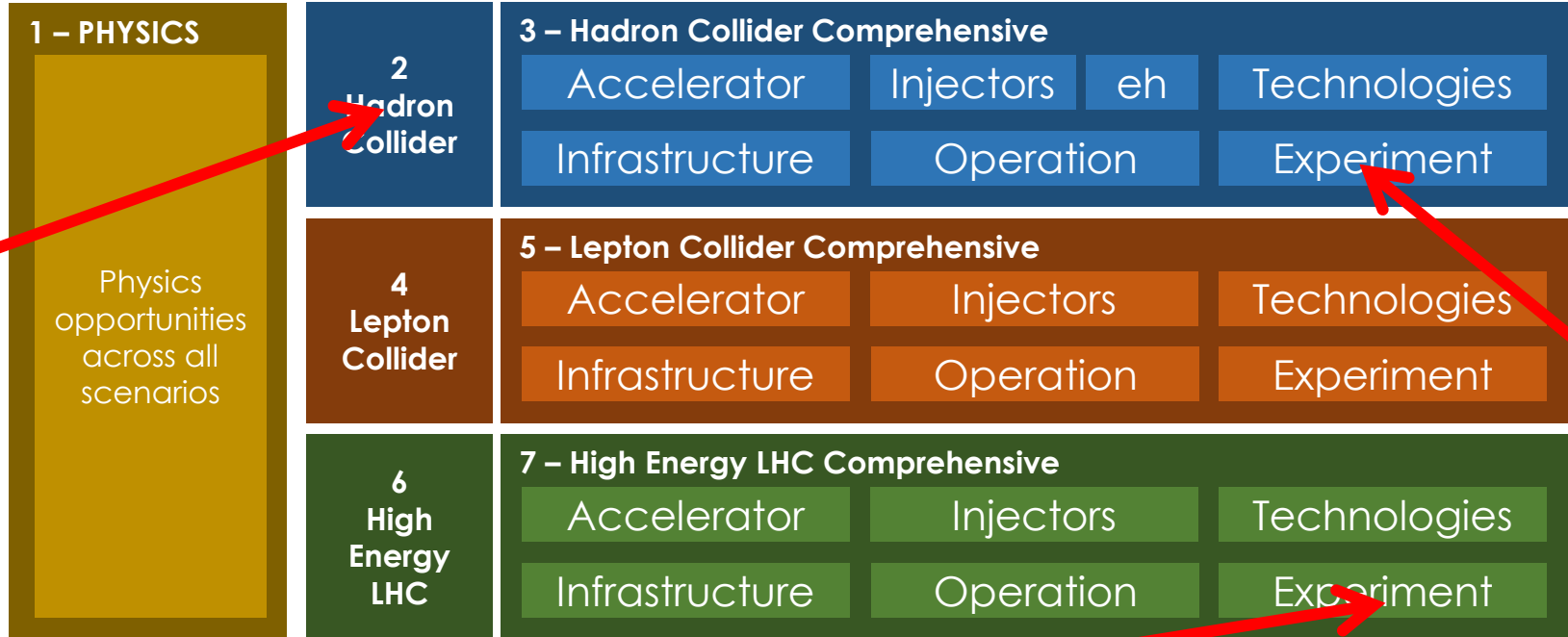
Oct. 11th, 2017

FCC Week Amsterdam (NL)

- Beurs van Berlage Conference Centre
- Monday 9 April – Friday 13 April 2018



7 Scientific/Technical Volumes



Assuming existing LHC cavern infrastructure and L*, “Phase 3 ATLAS, CMS”, not part of our working group
Luminosity, radiation, pileup are similar to FCC-hh ..., some reference to our working group will be there ...

CDR timescale

FCC-hh summary volume (100-200 pages) (summary volume of hadron machine, detector, infrastructure)

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Detector and Experiment: 20-30 pages summary (written by ONE volunteer from our group)

End 2017: content list

April 9-13 2018: FCC week Amsterdam

May 2018: submission of Version0 to advisory committee

Sept. 2018: final editing

November 22nd: Publication

FCC-hh comprehensive CDR volume "Experiments and Detectors"

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In order to allow referencing from the summary volume to the detailed report and since there have to be some final plots and results in this summary report we need this detailed report on a similar timescale, i.e.

End 2017: Table of content !!

April FCC week: Key results for the summary report and frozen structure that can be referenced.

June 30th 2018: Final draft

November 22nd 2018: Publication

FCC Detector and Experiments CDR Outline

Benchmarks processes, detector requirements from physics

Definition of the benchmark processes with main backgrounds
Detector requirements 'from physics' in terms of momentum resolution, energy resolutions, acceptance and objects like e/gamma performance, jet performance, tau, b, Emiss, Muons, Trigger

Experiment, detector requirements from environment:

Luminosity, radiation environment, luminous region, pileup
Discussion of the reference detector and alternative ideas

Software:

Simulation software for FCC detectors

Magnet systems:

Engineering of reference design and discussion of alternatives

Tracker:

Layout, performance, technology and data rate discussion

EMCAL:

Liquid Argon and Silicon, performance and technology discussion, ideas on digital ECAL

HCAL:

Organic Scintillators, Liquid Argon, SiPM technology, Silicon

Muons:

Principles of trigger versus identifier, standalone and combined performance, technologies

Trigger/DAQ:

Principle concepts in relation to HL-LHC

Physics performance:

DELPHES formulation in relation to ATLAS/CMS Performance for benchmark channels

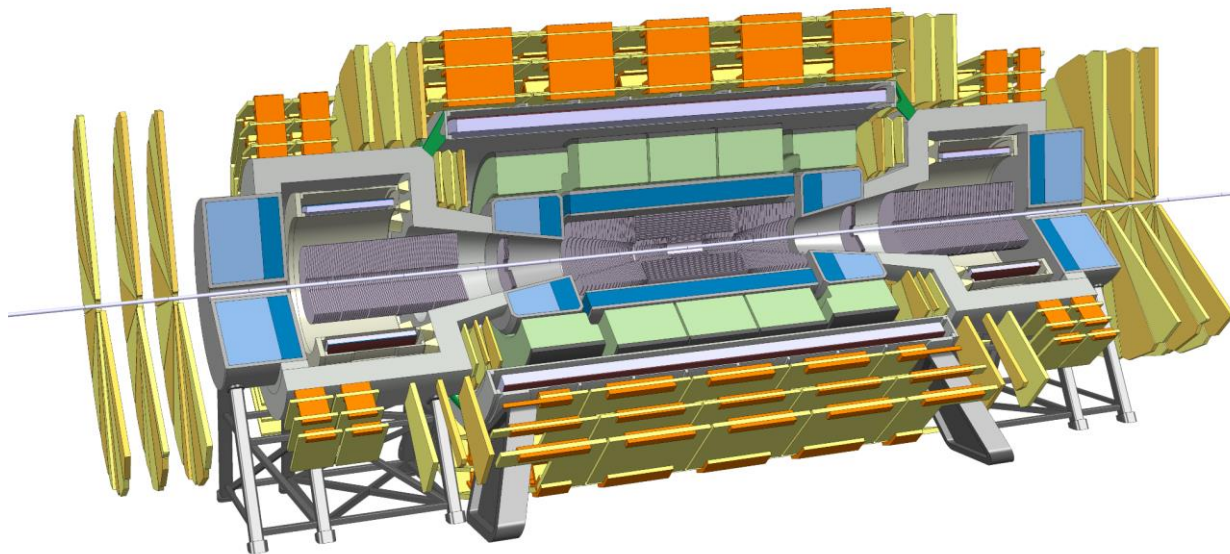
Cavern and infrastructure:

Cavern and shaft dimensions, installation scenarios, sidecavern, access, safety, shielding, activation, maintenance scenarios

Cost Goals, Strategic R&D:

Extreme radiation environment, large area silicon sensors, high speed links, microelectronics, radiation hard scintillators, Liquid Argon Technology, High precision timing detectors ...

Reference detector for the CDR



- 4T 10m solenoid
- Forward solenoids
- Silicon tracker
- Barrel ECAL Lar
- Barrel HCAL Fe/Sci
- Endcap HCAL/ECAL LAr
- Forward HCAL/ECAL LAr