

ESPP document

VII: The LHeC implementation plan: (optional) running scenario

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ESPP white paper preparation meeting for LHeC

The Large Hadron electron Collider as a bridge project for CERN

***1, ... 2,
1 ***,
2 ...

(Dated: November 3, 2024)

[Main eds.: Nestor, Jorgen; readers: Daniel, Monica, Uta]

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↑ (optional) joint detector and program for ep/eA/pp/pA/AA physics (Yuji): do we like to say something here?

Detector side - items and thoughts

- It is very difficult to have any words from ALICE at the moment, on combined eh/hh IP + detector proposal
 - We could ask ALICE3 people to reuse most of their tracker sensors (if we don't start on 2036)
- To justify pp runs: we could write somewhere (maybe in section 3):
 - The LHeC detector will be very well calibrated using NC events, and with better Calo+b-tag
 - suitable for precision EW (e.g M_W) and QCD (jets etc.): low lumi = low dose and pileup
 - High-lumi pp : we need to extend the detector scope for radiation dose
- We could say that our detector can be served for an hh detector (in section 7):
 - With additional PID detectors (which like for eA collisions anyhow) and HCAL (already there)
 - Some enhancement in central tracker for high multiplicity pattern recognition?
 - ... all these depend on the target physics of "ALICE 3e"

Implementation plan and staging

- 20 GeV e^- to start
 - 2036? (how to access to IP2 ?)
- Stand-alone run to push luminosity to $\beta^* \simeq 10$ cm
- 2 or 3 turn ERL for 50 GeV
- Using the ERL for injector for LHC-ee