

*Future prospects in high-energy physics
&
connections to other fields*

- ▶ The two main scenarios for the evolution of the HEP frontier:

I. Evidence of NP @ mid. run-II
[~ within 1 year]

The “easy” case

II. No clear evidence of NP
@ run-II

*The case we probably
need to discuss more...*

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“standard” HL-LHC program
seems to be well motivated (?)

- Precision studies of the new states
- Exploration of “near-by” NP
- Time/data to optimize the design of new facilities

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Maximal “acceleration”
toward an increase of energy
[*improved-LHC, HE-LHC*
or new machine] (?)

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“non-standard” HL-LHC program
with significantly **improved detectors**
& not necessarily maximal lumi (?)

→ “Flavor-physics” with ATLAS & CMS
[→ *key role of 3rd gen. & especially tau's*]

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A. Heavy-quark physics [LHCb – phase III]

- What is the highest luminosity that LHCb can stand?
- How can electron and tau performances be increased substantially ?
- Worth independently of LHC run-II results?

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- Which experiments worth to push independently of run-II results?
- Worth pushing for the High-intensity Muon Beam ($\mu \rightarrow 3e$ phase II)?

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C. Direct dark-matter searches [Xenon, ...]

- Do run-II results influence direct DM searches? Or can direct DM results influence the HEP program?
- Role of fixed-target experiments (SHIP)?

D. Neutrinos [Long-baseline + $0\nu 2\beta$]

- Which measurement could have more impact on the HEP frontier (*if any*)?
- Are there synergies with hep from the technical point of view?

E. Cosmology [*long list...*]

- Is the program completely disconnected (*or how model-indep. is the connection*)?