

Detector R&D in FJPPL/FKPPL

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- **FJPP/FKPPL projects on instrumentation**
- **Timeline of future HEP or Projects**
- **Detector technologies**
- **Which strategy for the detector R&D in FJPPL/FKPPL ?**

DISCUSSION

Common projects with instrumentation

- **FJPPL**

- **FKPPL**

ILC/CALICE SiW (beam test)
COMET (Electronics & trigger)?
ALICE MFT and dimuon



ILC/CALICE SIW (beam tests)
COMET (electronics & Trigger)?
ALICE MFT & ITS

W105 DP LAr TPC
TPC for ILD

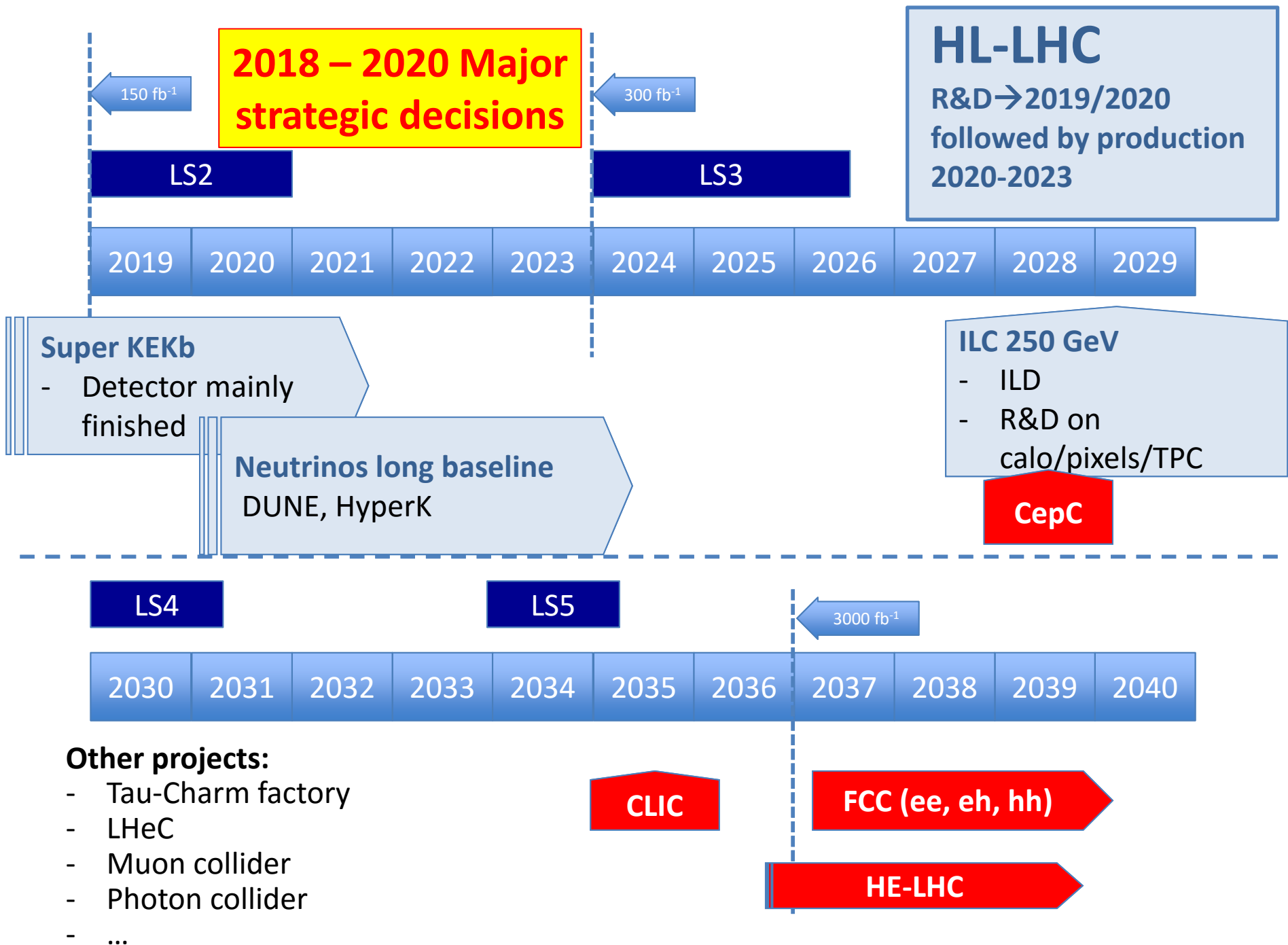
GRPC CMS R&D

GBAR (TOF, trap → commissioning))

LAMPS (Front End electronics)

Planar pixel sensors
Monolithic sensors MAPS

SITRINE0 (Si tracker for education)



HL-LHC & silicon sensors

- **New tracker in ATLAS/CMS, only Silicon :**
 - 3d sensors for pixels
 - Planar (edgeless) sensors for pixels (Fr/J)
 - HV-CMOS (ATLAS option for outer layer of pixel) (Fr)
 - Silicon strips (J)

and ALICE (MFT/ITS) now in production for phase 1 (K/Fr)

- **But also large area of silicon sensors in :**
 - HGCal of CMS (Fr)
 - Timing detector with LGAD sensors (HGTD ATLAS and CMS)

→ Improving radiation hardness, pixel size /dead areas, interconnection, timing performance and cost !

Performance strongly relies on ASIC performance :

- RD53 chip for ATLAS/CMS pixels detectors
Omega (Fr) involved in HGCal and HGTD ASIC developments.

HL-LHC

- **New muons chambers :**
 - ATLAS New Small Wheels (**IRFU/Fr**), mainly large areas MicroMegas (Phase 1)
 - New high eta chamber in CMS (**K/Fr**) with RPC, with good time measurement capabilities

R&D for HL-LHC should finish around 2019 to start production.

(Should FJPPL/FKPPL focus of HL-LHC next two years ?)

ILC and future HEP projects

- ~2018-2019 : Major strategic decisions (ILC,CEPC)

Towards ILC :

- CALICE development (Fr/J) : large scale EM calorimeter prototype with beam test in 2017/2018
- CMOS pixel detectors (Fr/J) :
- TPC developments (Fr/J) :

Neutrinos :

- MicroMegas (Fr)
- SiPM for trigger light measurement (Fr)

Which strategy for detector R&D

- Continue with one year request mainly based on networking/travels than real common R&D work

OR

- Change towards 2-3 years financed budget with deliverable R&D object (not only networking but R&D collaboration but less projects financed)

Which strategy for detector R&D

- Give stronger weight to common Japan/Korea/France projects to have enough internal critical mass to make R&D

OR

- Continue collaboration between us in larger R&D collaborations ?

Which strategy for detector R&D

- Investigate long term detector R&D technology (not targeted yet to any project)

OR

- Continue current R&D on less risky technology towards present projects

Which strategy for detector R&D

- Propose identified hot topics on which to work (top bottom coordinated approach)

OR

- Continue with bottom-up approach and many different technologies