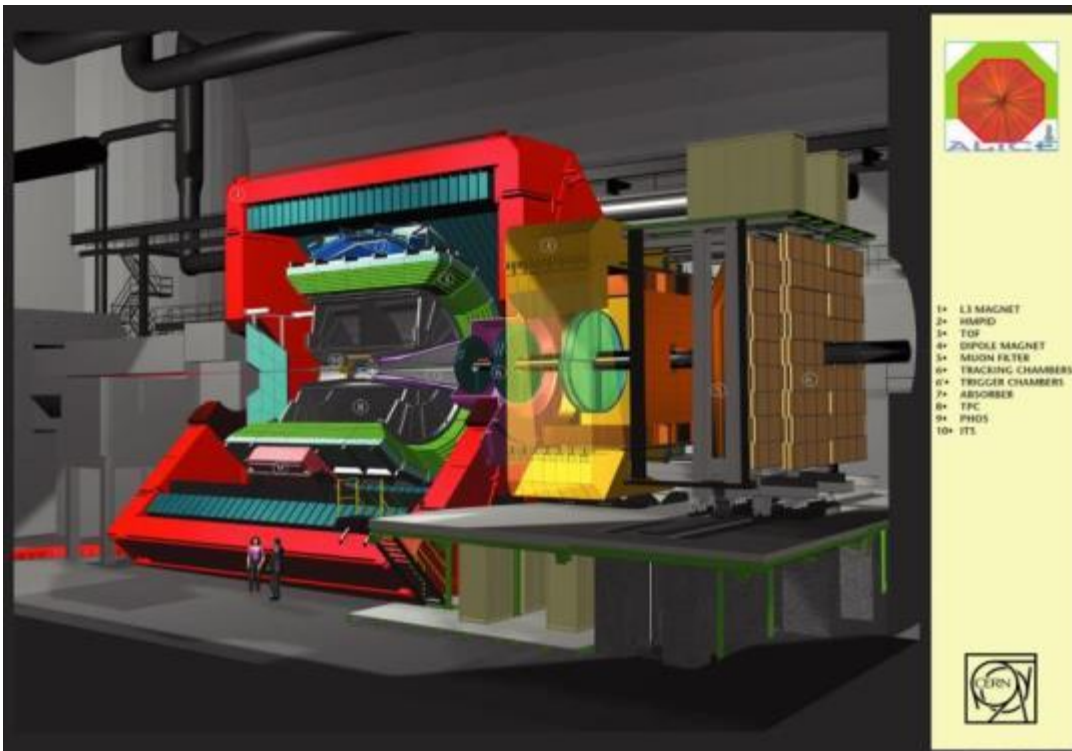


ALICE Physics plans till 2025

Status August 2018

HENP



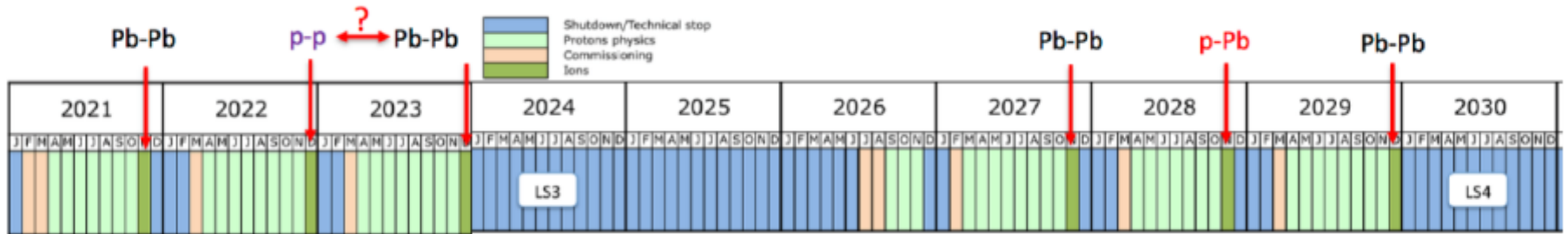
UiB
(Nuclear Physics, Microelectronics)

UiO
(Nuclear Physics, Electronics)

HVL

USN

ALICE schedule

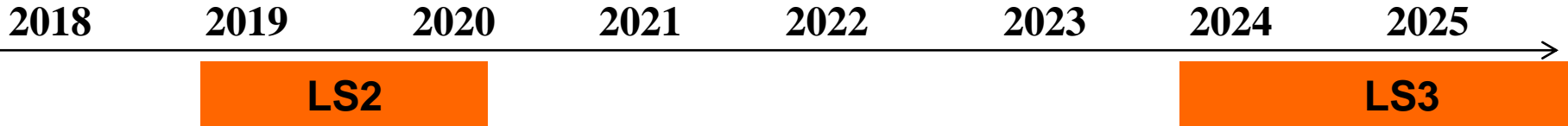


◆ ALICE L_{int} requirements (Upgrade LOI):

- Pb-Pb: 10/nb @0.5T + 3/nb @0.2T
- pp 5.5 TeV: 6/pb (4e11 events)
- p-Pb: 50/nb
- pp 14 TeV: introduced in 2015 (O² TDR)

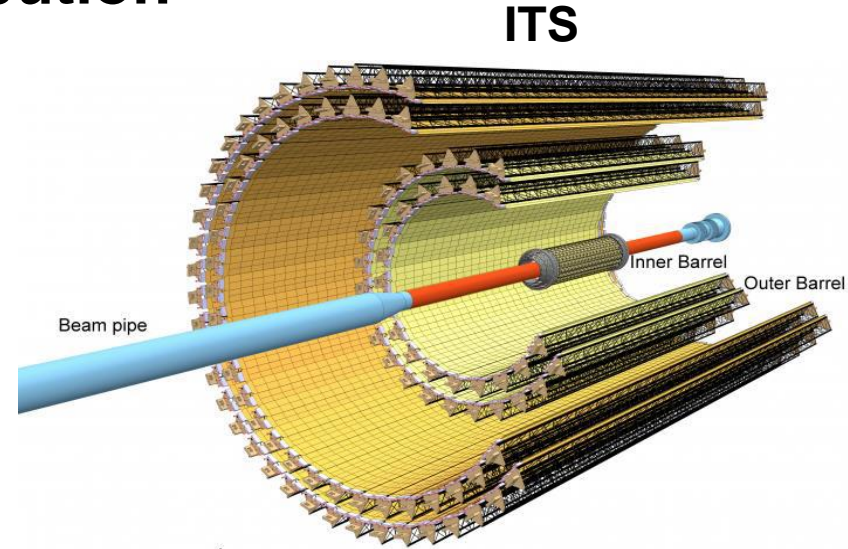
Year	System	$\sqrt{s_{NN}}$ (TeV)	L_{int} pp: (pb ⁻¹) p-Pb: (nb ⁻¹) Pb-Pb: (nb ⁻¹)	$N_{collisions}$
2021	pp	14	0.4	$2.7 \cdot 10^{10}$
	Pb-Pb	5.5	2.85	$2.3 \cdot 10^{10}$
2022	pp	14	0.4	$2.7 \cdot 10^{10}$
	Pb-Pb	5.5	2.85 0.2T	$2.3 \cdot 10^{10}$
2023	pp	14	0.4	$2.7 \cdot 10^{10}$
	pp	5.5	6	$4 \cdot 10^{11}$
2027	pp	14	0.4	$2.7 \cdot 10^{10}$
	Pb-Pb	5.5	2.85	$2.3 \cdot 10^{10}$
2028	pp	14	0.4	$2.7 \cdot 10^{10}$
	Pb-Pb	5.5	1.4	$1.1 \cdot 10^{10}$
	p-Pb	8.8	50	10^{11}
2029	pp	14	0.4	$2.7 \cdot 10^{10}$
	Pb-Pb	5.5	2.85	$2.3 \cdot 10^{10}$

ALICE LS2 upgrade

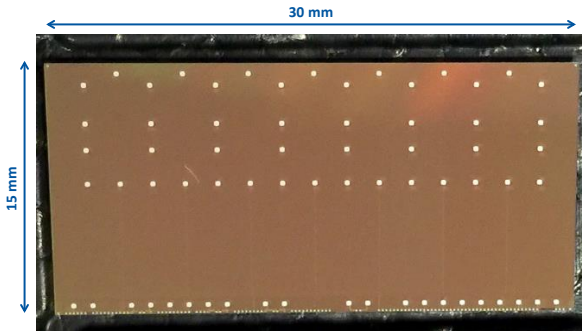


LS2 upgrade – Norwegian contribution

- contribution to the readout chain of the ITS detector
 - Readout Units (RUs) to read out the ITS-ALPIDE sensors
 - Common Readout Units (CRUs) to read out the ITS RUs



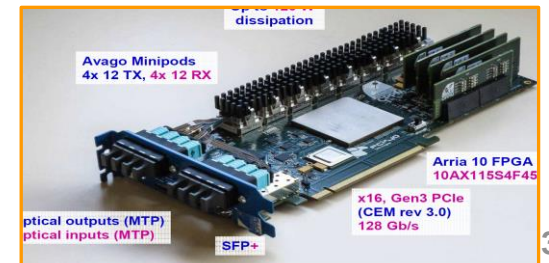
MAPS - ALPIDE



RU



CRU



ALICE Physics analysis plans

- **Pb-Pb collisions**

- **Heavy Flavour**

- Λ_c and Λ_b
- B-mesons

- **Quarkonia**

- J/ψ (prompt and non-prompt)
- $\psi(2S)$

- **Jets**

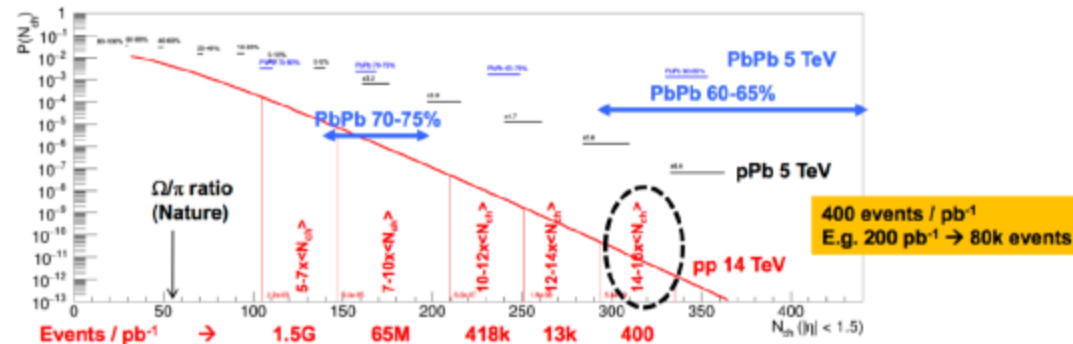
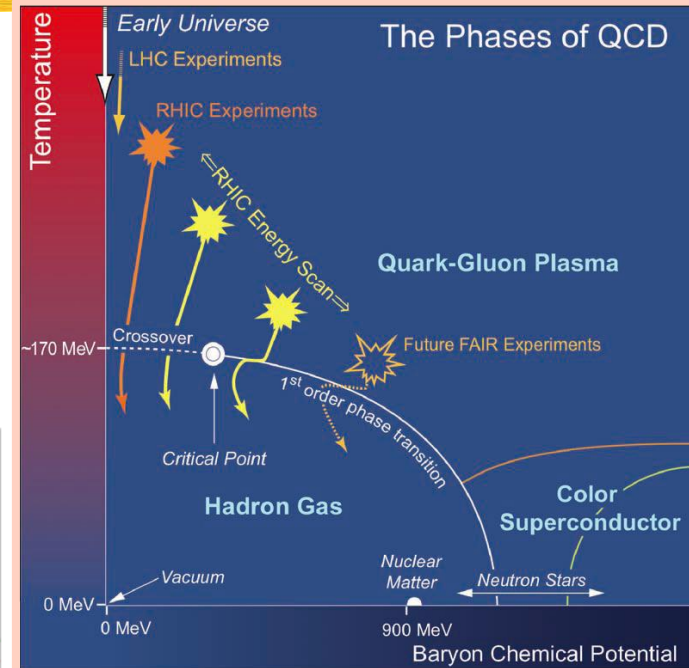
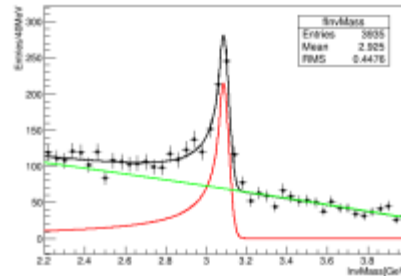
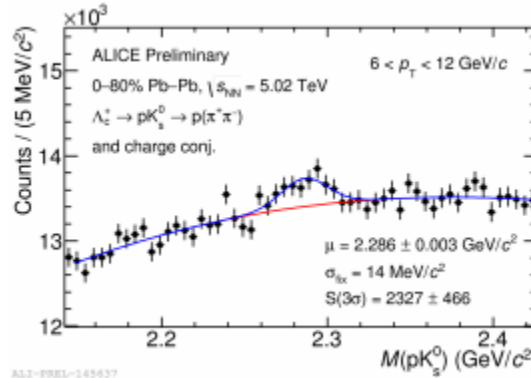
- Substructure

- **Correlations**

- **UPC**

- ...

- **proton-proton programme**



ALICE LS3 upgrade

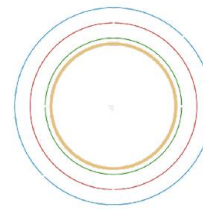
2018 2019 2020 2021 2022 2023 2024 2025

LS2

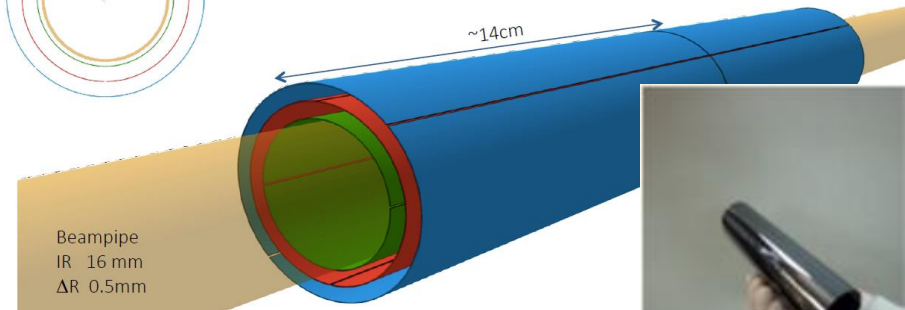
LS3

LS3 upgrades - under discussion

- ITS ultralight layers
 - based on ALPIDE design
 - wafer-scale sensors by stitching
 - further reduction of material budget
- FoCal
 - forward direct photon measurements - a probe of small-x gluons
 - high granular electromagnetic calorimeter



Pipe: $r \approx 16\text{mm}$, $\Delta R = 0.5\text{mm}$
L0: $r \approx 18\text{mm}$, L1: $r \approx 24\text{mm}$, L2: $r \approx 30\text{mm}$



Beampipe
IR 16 mm
 ΔR 0.5mm

2D stitched sensor = wafer-scale

