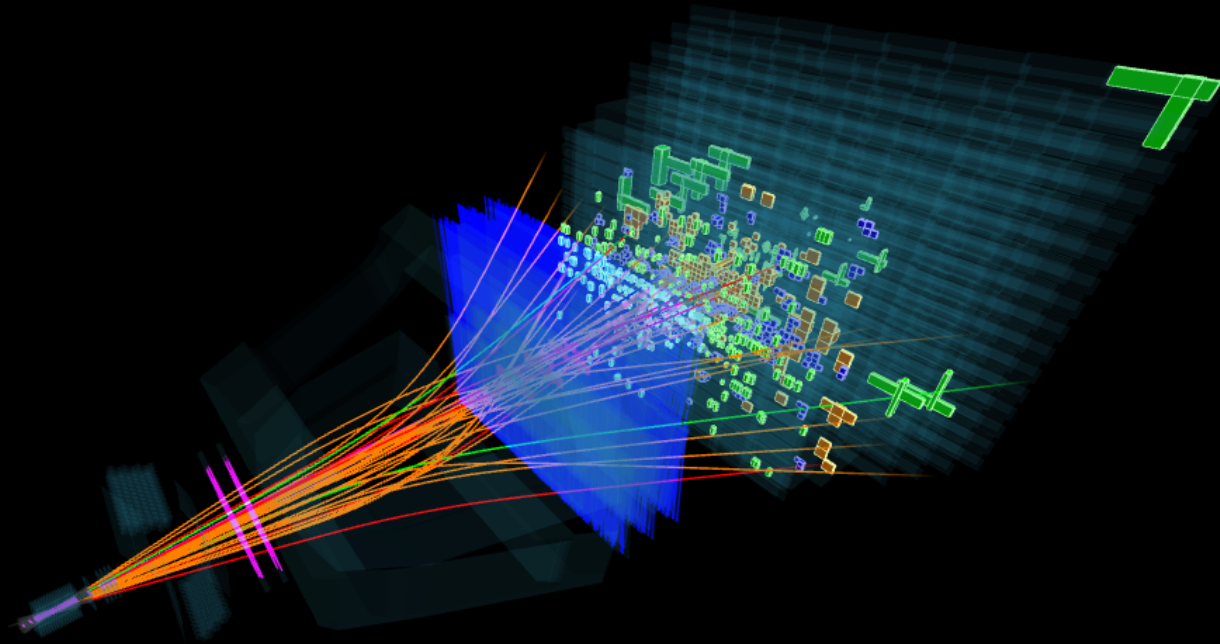




Event 158826354
Run 206854
Sat, 28 Apr 2018 21:48:17



LHCb-PISA

Preventivo locale 2023

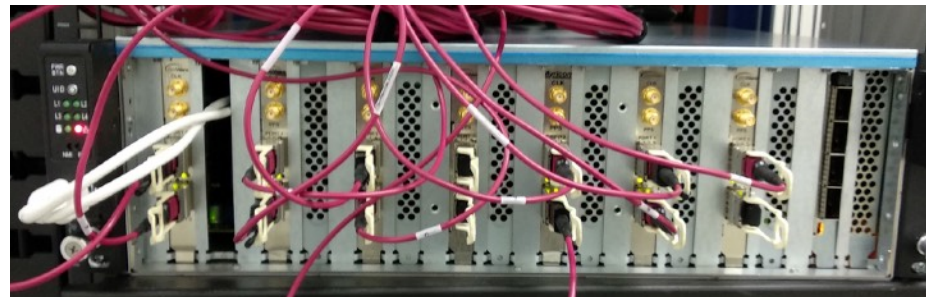
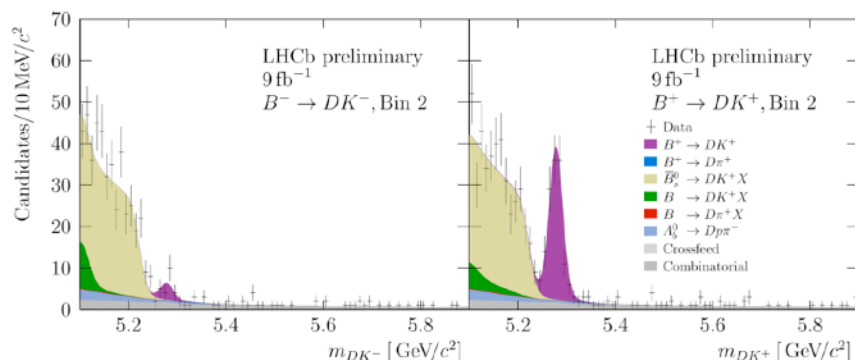
Giovanni Punzi

30/6/2022

LHCb status & recent news

Status of the Experiment

- 25/5: **Publication** of world best D^0 mixing parameter y_{CP}
- LHCb22: **Largest observed CPV asymmetry** (85%)
- **Commissioning new detector for Run-3 this year**
- **Preparing TDRs for Upgrade-II ($L > 10^{34}$)**



PISA activities

- Responsabilita': Convener Charm WG + Convener RD WG + Chair Editorial Board
- Studenti 2022: 5 PhDs, 3 Similfellows @ CERN, 5 studenti magistrali
 - **T. Pajero**: Premio Conversi. **G. Tuci**: Best LHCb thesis + miglior tesi STEM di UNIPI
- Attivita':
 - Largest Italy group in Real Time Analysis
 - Leadership of Fast Simulation efforts, founders of 'Simulation Project'
- Commissioning: FPGA-based hit-finding in LHCb vertex detector (VELO)
 - Increases DAQ throughput by 12%. Replaces raw VELO data on-the-fly with hit coordinates.
 - First real-life application of RETINA project: data reconstruction embedded in the readout
 - INFN prototype of FPGA tracker at Level-0 (30 MHz): getting ready for parasitic running in Run
 - New development: FPGA-based Luminosity measurement in real time & LHC feedback



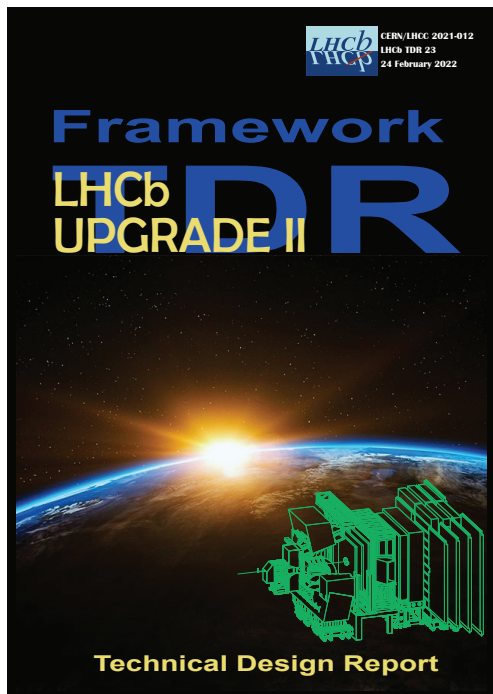
LHCb Upgrade-II

Luminosity plans

LHC Run Year $\text{cm}^{-1}\text{s}^{-1}$	Integrated luminosity fb^{-1}		
	1.0×10^{34}	1.5×10^{34}	2.0×10^{34}
Run 1-4	50	50	50
LS4	—	—	—
Run 5 Year 1	21	25	26
Run 5 Year 2	43	50	51
Run 5 Year 3	43	50	51
LS5	—	—	—
Run 6 Year 1	43	50	51
Run 6 Year 2	43	50	51
Run 6 Year 3	43	50	51
Total	284	325	331

Preliminary cost estimates LS4

Detector	Baseline (kCHF)
VELO	14800
UT	8900
Magnet Stations	2300
MT-SciFi	22400
MT-CMOS	19500
RICH	15600
TORCH	9900
ECAL	34800
Muon	7100
RTA	17400
Online	8900
Infrastructure	13500
Total	175100



Preliminary cost estimates LS3

Detector	Proposal	Cost (kCHF)
SciFi consolidation	Replace inner modules (12X + 12stereo)	1800
MAPS modules	2 layers, 1 m^2 each	3000
Magnet Stations	full installation	2250
RICH	new FEE electronics	2300
ECAL	32+144 inner modules	3600
RTA	Downstream tracking with FPGA	1000

Anagrafica LHCb-Pisa

Bassi	Giovanni	1	0	0	1	100	100	dott	
Bedeschi	Franco	1	0	1	1	55	55	staff	Dir Ric
Fantechi	Riccardo	1	0	0	0	30	30	staff	I Ric
Lazzari	Federico	1	0	0	1	100	100	dott	
Lusiani	Alberto	1	0	1	1	30	30	staff	Ric SNS
Morello	Michael Joseph	1	0	1	1	100	100	staff	PA SNS
Nico	Klejine	1	0	0	1	100	100	dott	
Pica	Lorenzo	1	0	0	1	100	100	dott	
Punzi	Giovanni	1	0	1	1	90	90	staff	PO
Rama	Matteo	1	0	1	1	100	100	staff	Ric INFN
Ribatti	Roberto	1	0	1	1	100	100	dott	
Walsh	John	1	0	1	1	100	100	staff	I Ric
		12	0	7	11	10.05	0	10.1	

Testbed Operations Manager

Charm WG simulation liaison

Charm WG RTA/DPA liaison

Coprocessor Testbed Coord.

Rare decays convener

Chair of Editorial Board

+ 1 PD straniero da 1/11/22

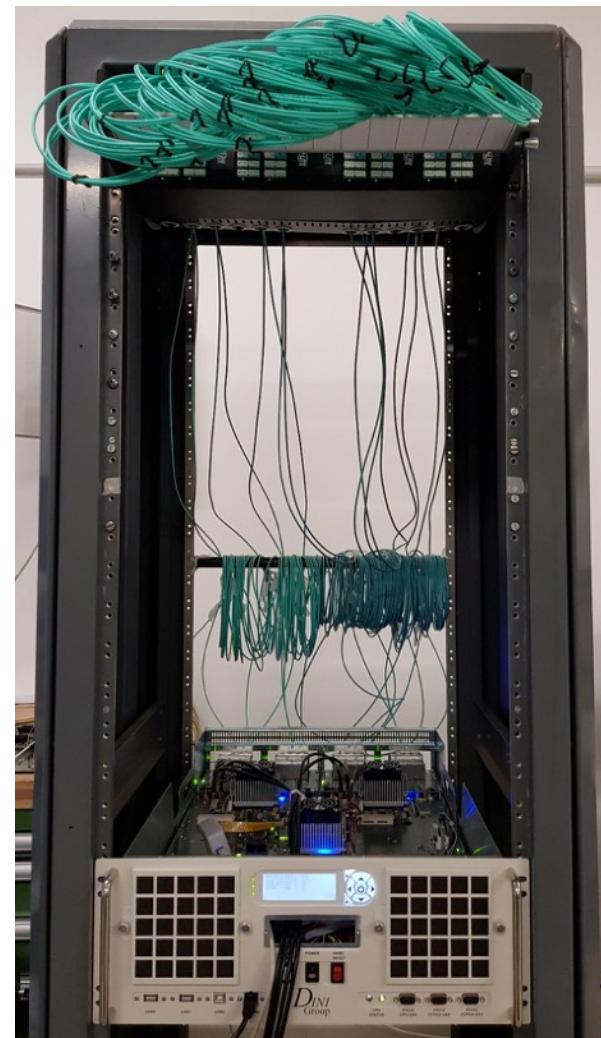
+ 5 laureandi magistrali:

- Daniele Passaro
- Domenico Riccardi
- Fabio Novissimo
- Francesco Paciolla
- (Francesco Terzuoli)

- FTE stabile ~10
- LHCb-Pisa compie **10 anni**

Richieste alla Sezione

- Essenziale Laboratorio FPGA/Real Time Analysis
(shared with MEG)
 - 1) Importante responsabilita' Run-3:
Commissioning VELO Hit-finding in Real Time
 - 2) FPGA tracking demonstrator:
Live track-finding during physics DAQ (parasitical)
-> intensa attivita' commissioning ~1 y
 - 3) RETINA tracking system in Run-4
Led by Pisa, horizon ~2030
Specific LS3 TDR in ~1 year
- Adeguati spazi ufficio
- **A note for the long term: Upgrade-II a huge opportunity for Pisa in detector developments.**



Richieste finanziarie (approx.)

Preventivo LHCb-Pisa 2020		
Missioni	Missioni IT	11 k€
	ME metabolismo	84.5 k€
	ME responsabilita'	7.6 k€
	ME FPGA Vertical Slice Test (2 mu)	7.6 k€
TOTALE Missioni		110 k€
Consumi	Metabolismo	16.5 k€
	FPGA Vertical Slice Test	10 k€
TOTALE Consumi		26.5 k€

N.B.: - Metabolismi da tabelle standard CSN1