



Il gruppo LHCb-Bari è coinvolto nelle seguenti attività:

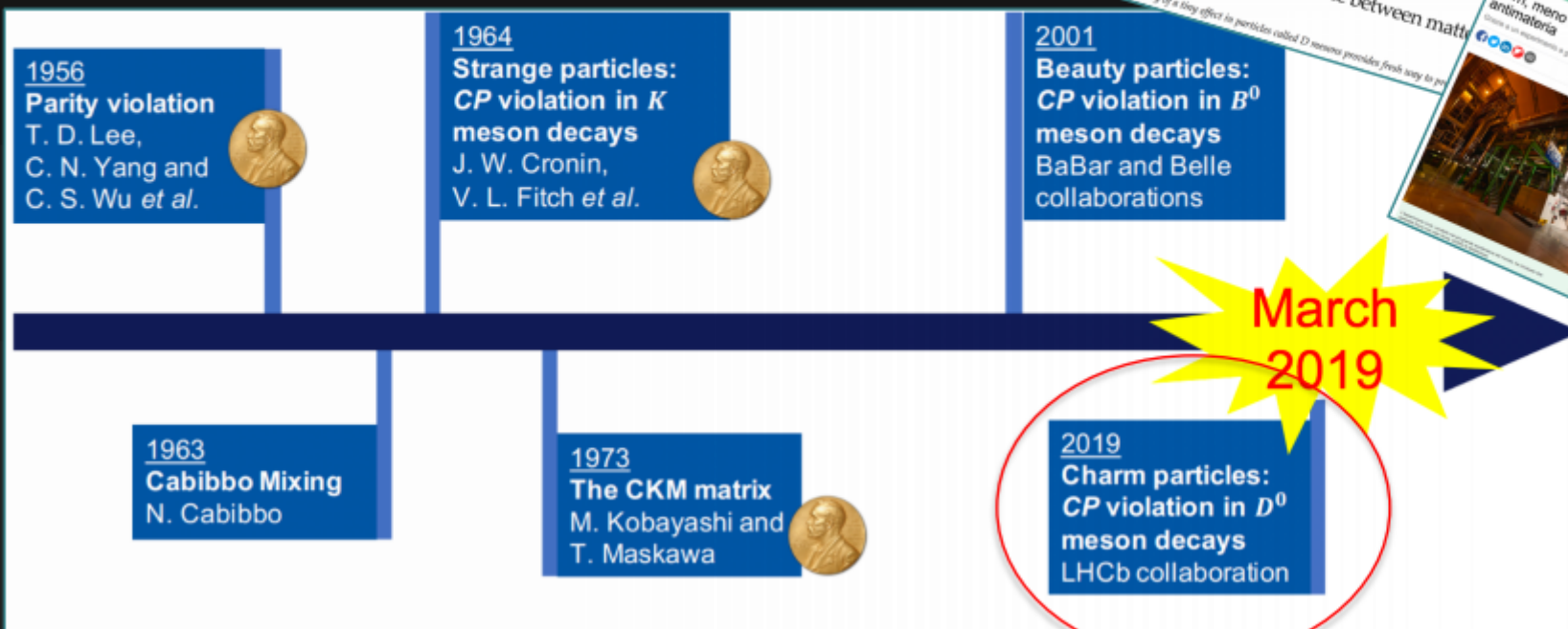
- **Sviluppo del sistema di acquisizione dati del rivelatore di muoni per l'upgrade di fase 1;**
- **Studi di spettroscopia di mesoni e barioni charmati;**
- **Ricerca di segnali di violazione dell'universalità leptonica.**



Observation of CP Violation in Charm Decays

R. Aaij *et al.* (LHCb Collaboration)
 Phys. Rev. Lett. **122**, 211803 – Published 29 May 2019

$$\Delta A_{CP} = (-15.4 \pm 2.9) \times 10^{-4}$$



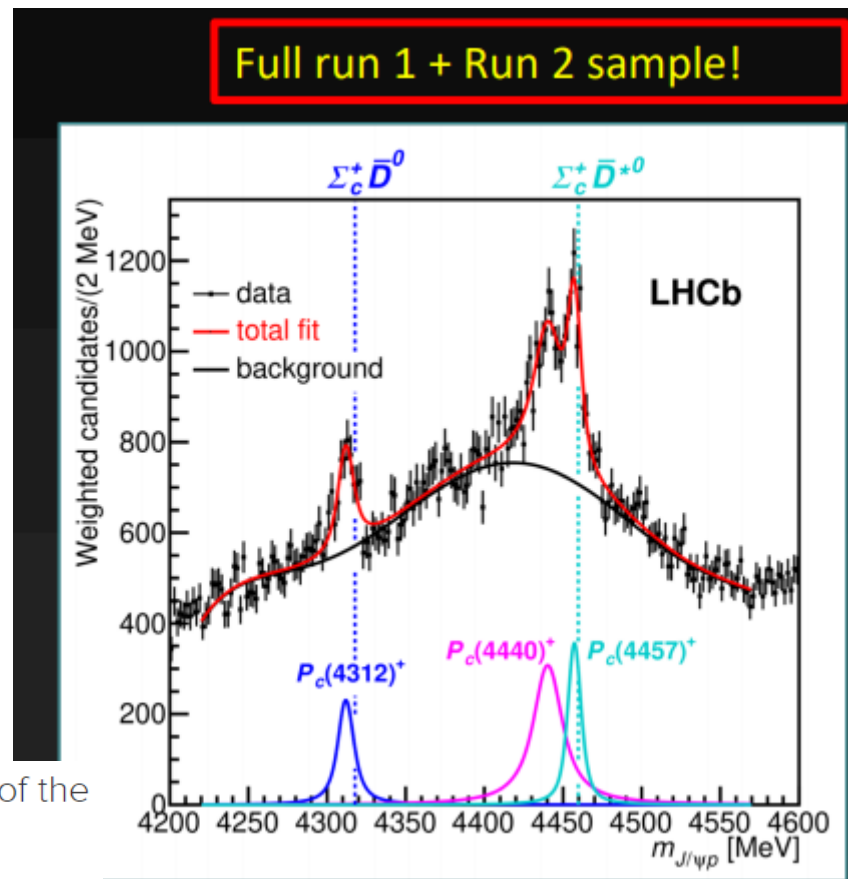


Observation of new pentaquark states

- Update by LHCb using full Run 2 statistics
- **A new peak now emerges from background!**
 $P_c(4312)$
- In addition, the $P_c(4450)$ reveals now a more complex structure with two different peaks
- **Further confirmation of the previous pentaquark discovery**

Observation of a Narrow Pentaquark State, $P_c(4312)^+$, and of the Two-Peak Structure of the $P_c(4450)^+$

R. Aaij *et al.* (LHCb Collaboration)
Phys. Rev. Lett. **122**, 222001 – Published 5 June 2019



Attività LHCb-Bari 2019: analisi

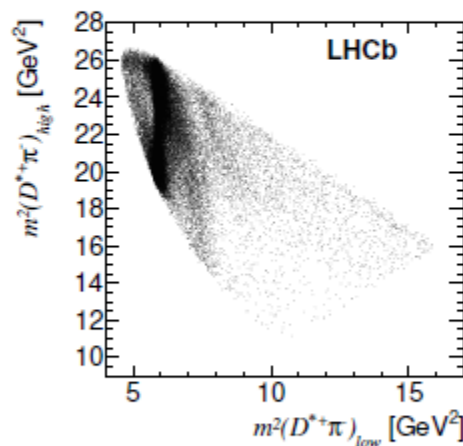
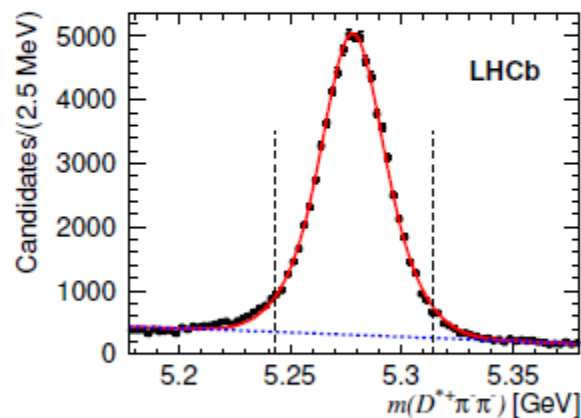
Dalitz plot analysis of the $B^- \rightarrow D^{*+} \pi^- \pi^-$ decay

[Antimo Palano](#), Maurizio Martinelli

Approval-to-go-to-PAPER, June 4, 2019

□ To be submitted to Phys. Rev. D.

□ 79120 B^- events.



- Study of charmed meson spectroscopy decaying to $D^{*+} \pi^-$.
- The decay is dominated by the presence of $D_1(2420)$, $D_1(2430)$ and $D_2^*(2450)$, together with several other resonant contributions.
- Resonances parameters are measured and the quantum numbers of $D_0(2550)$, $D_1^*(2600)$, $D_2(2740)$ and $D_3^*(2750)$ established.
- Measurement of the $J^P = 1^+$ mixing angle and phase.

Attività LHCb-Bari 2019: analisi

IN PROGRESS

- Partial wave analysis of $B \rightarrow K_s^0 K K \pi$
A. Palano, M. Martinelli
- Dalitz plot analysis of $B^0 \rightarrow D^*(2010) K_s^0 \pi$
M. De Serio, M. Martinelli, A. Palano, A. Pastore
- Measurement of the $B_s \rightarrow D_s \tau \nu_\tau$ branching fraction using 3 prong τ decays
R.A. Fini + Ferrara



Very intense activity at LHCb site!

- Activities to dismantle the old sub-detectors progressing very well and on schedule
- Preparation of infrastructure also progressing well
- Prepare for the first installations in summer



Removing outer tracker stations



Opening the shielding wall



HLT farm containers

Dismantling of M1 muon station



Removing the old VELO

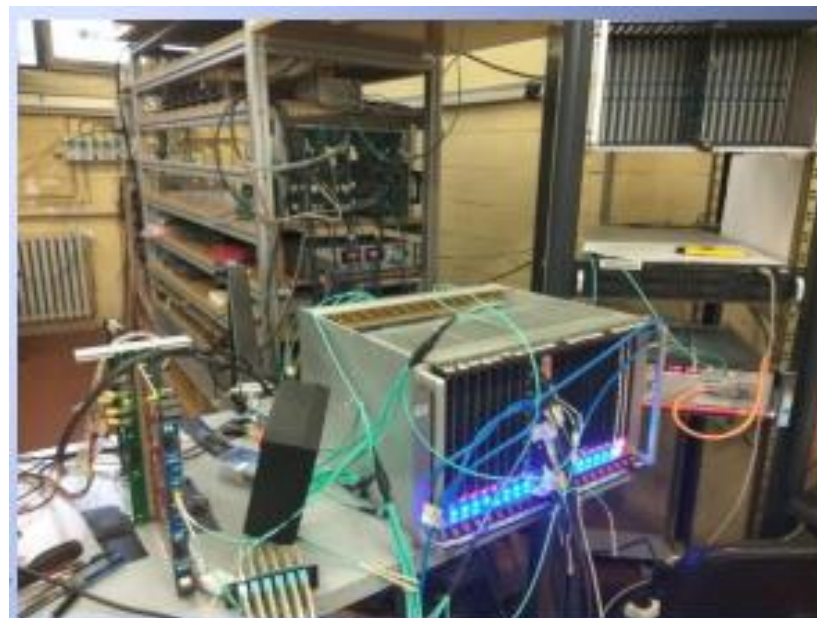


Removing the beam pipe



Data readout at 40MHz: nODE boards, equipped with nSYNC ASIC (4 per Board)

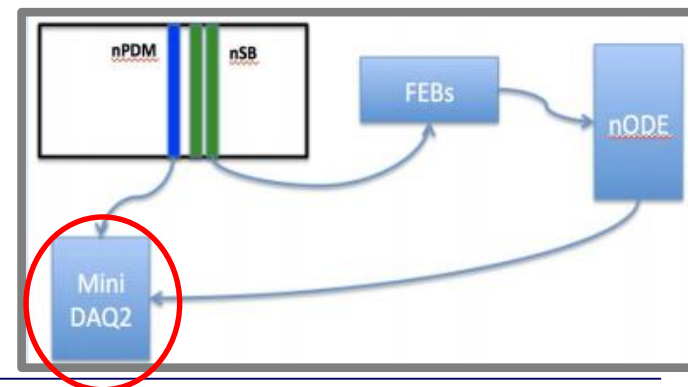
Pre-production boards now under test at LNF



Full chain test setup in preparation in Roma1

Firmware developed in Bari and Roma2

Full chain test with final firmware in preparation



Anagrafica e attività prevista LHCb 2020

Ricercatori

M. De Serio (resp. loc.)	70%
R.A. Fini	70%
A. Palano	0%
A. Pastore	70%
S. Simone	70%
Totale FTE	2.8

Richiesta servizi: 1 m.p. Servizio elettronico

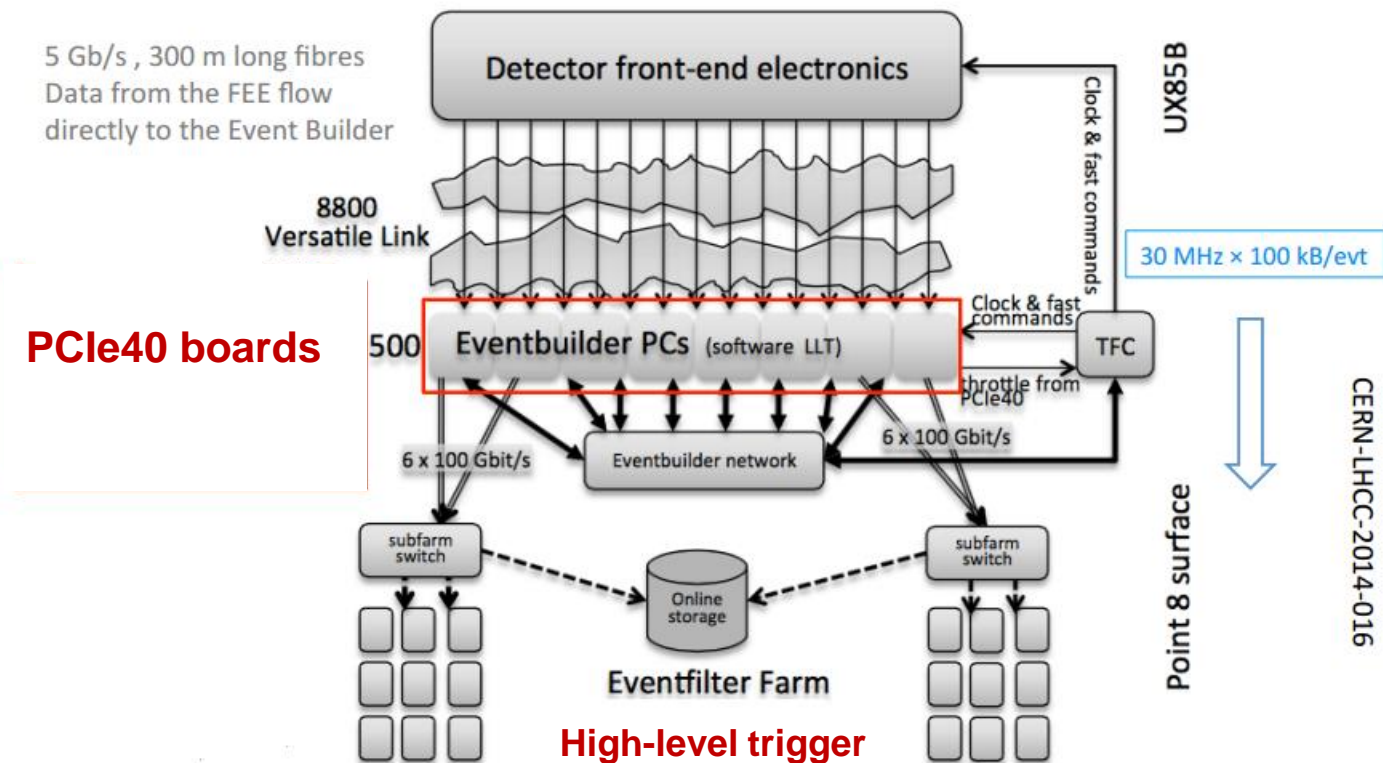
Attività prevista:

- Completamento test catena elettronica ed installazione
- Completamento analisi in corso 2019

BACKUP SLIDES

LHCb-DAQ upgrade

Readout trigger-less dell'intero rivelatore a 40 MHz, trigger di tipo software



PCIe40 (TELL40): interfaccia tra elettronica di front-end e farm