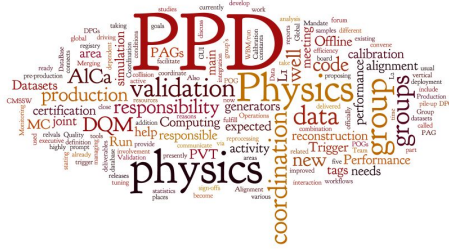




PPD: Physics Performance and Datasets

- Technology and operation of workflows for:
 - data certification and quality monitoring
 - management of data processing and simulated dataset (Monte Carlo)
 - Alignment & Calibrations + Database infrastructure
 - software verification and validation
- Scale of the challenges
 - 10 billions collision events per year:
 - several processing passes
 - ~10 billions of simulated events per year
 - Multiple production campaigns active in parallel
 - calibration of $O(100M)$ channels in 10 sub-detectors
 - several millions of lines of code ~100 releases and pre-releases per year

Physics Performance & Datasets (PPD) organisation 2018



PPD Coordinators
 Markus Klute
 Giovanni Franzoni

PPD Resource Manager
 Kirsti Aspola

Physics Data & MC Validation (PdmV)
 Francesco Fabozzi
 Gurpreet Singh Chaval
 Patricia Rebello Teles

Data Quality Monitoring & Data Certification (DQM-DC)
 Kaori Maeshima
 Virginia Azzolini
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Alignment Calibration & Database (AICaDB)
 Giacomo Govi
 Arun Kumar
 Luca Pernie

DPG, POG and PAG Validation
 Nadeesha Wickramage
 Zhen Hu

Monte Carlo Request Management
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 Bhawandeep Bhawandeep
 Anirban Saha
 Scarlet Norberg
 Prafulla Behera

Dataset Definition Team
 Dustin Anderson
 Kai-Feng Chen
 Swagata Mukherjee

Upgrade Validation and MC production
 Sandhya Jain

Online Development
 Tomas Hreus

Offline Development
 Dmitrijus Bugelskis

Data Certification
 Amandeep Kaur Kalsi
 Ridhi Chawla
 Sandeep Kaur Mundal
 Sandeep Kaur
 Sandeep Sharma

Software Coordinator
 Open Position

AICa-HLT Contact
 Thiago Tomei
 Tongguang Cheng

CondDB webmaster
 Open Position

DPG, POG & PAG contacts and validators



Contributing to PPD

- Trying to find institutes willing to take **long term** responsibility
 - We provide training and support
 - Remote contribution are possible for most tasks
- All PPD areas provide open tasks which combine operational contributions and development opportunities
 - also important opportunities for young physicists to learn the bread&butter of the experimental challenge in modern/complex detector
 - big return for analysis oriented profiles



Opportunities in PPD

1/2

- Strong & long-lasting contribution from Lithuania
 - >dozen Erasmus students over past years
 - Software engineers from Vilnius have been and are at the heart of PPD operations and software infrastructure
- We wish to expand this involvement to Baltic countries
- Potential for synergy with contributions from physics or engineering/IT departments
 - development & maintenance of vast pool of software and tools used in the PdmV group
 - web-based services for management, bookkeeping & monitoring of 10^4 dataset processing requests per year
 - Development and operations of bookkeeping web-services for Data-Quality or for Alignment-And-Calibration teams



Opportunities in PPD

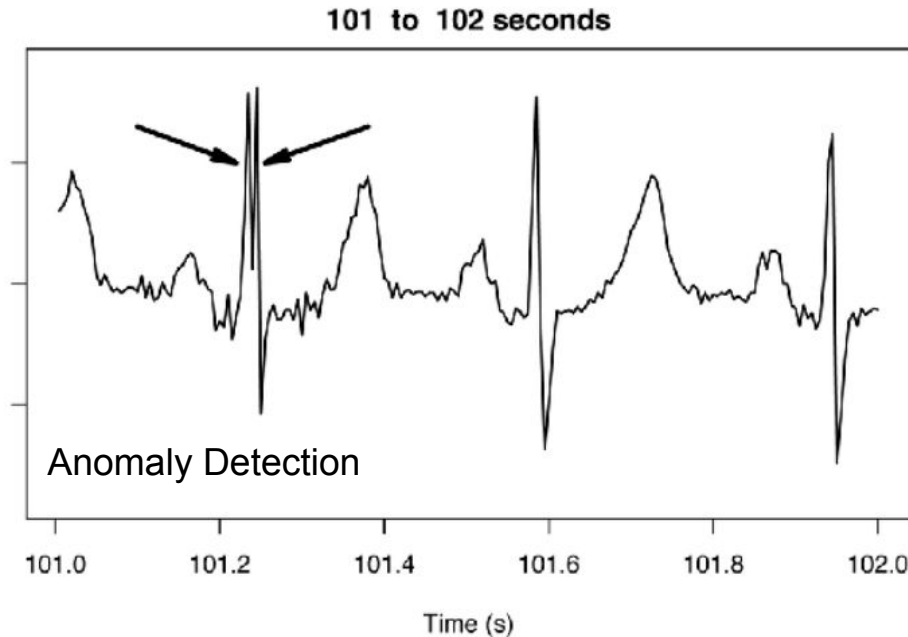
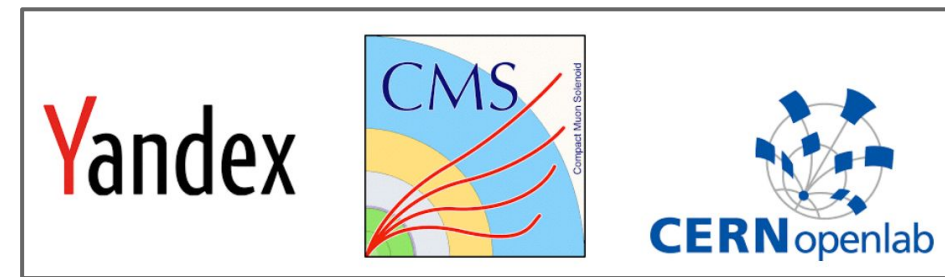
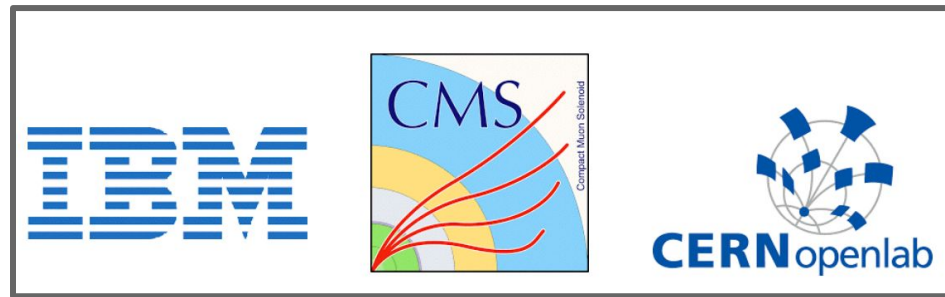
2/2

- **Complex infrastructure maintained centrally:**
 - online monitoring of detector performance
→ sampling events from High Level Trigger ($\sim 100\text{Hz}$)
 - offline quality checks of physics object performance
→ certify events for physics analysis
 - During the long shutdown 2 review lessons learned
→ r&d and deployment both in the C++ framework and in the web-services
- **Central team**
 - provides bleeding edge software framework for these tasks
→ plenty of development opportunities
 - integrates development of sub-detector experts
 - coordinates feedback on physics performance
→ exposes to the intimate details of the detector performance
- **Team is currently small: possibility to have large impact and visibility in the collaboration**



R&D in PPD: Machine Learning for DQM

- Collaboration with IBM and Yandex
- Pilot projects in online DQM and DC with established feasibility and r&d ahead



- Requires long term commitment
 - opportunities for Computer Scientists