



Lithuanian Consortium for
particle physics

Update on activities of Experimental Nuclear and Particle Physics Center

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2024-05-24 LPPM2024



Outline



- Background information about myself
- Current status of the Center*
- Future vision of the Center*

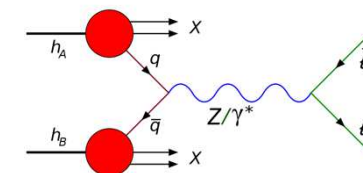
* Experimental Nuclear and Particle Physics Center



Early involvement with CERN



- First involvement with CERN was via the EU Framework FP7 project “BalticGrid” in 2007-2008 and 2008-2010, as a participant of WP “Identification of applications and gridification”
- Joined the CMS Collaboration in 2008
- In 2011, I notably contributed to the CMS analysis of the Drell-Yan process at $\sqrt{s} = 7$ TeV and joined the author list
 - Contribution to this analysis was continued
- Since 2012 became a CMS author due to M&O-A and EPR work
- Since 2013 was a project leader for the joint project with theoreticians “Subatomic particle physics in CERN CMS experiment (DaFi)”. Annual funding until 2018, then two times biannual (-2022)



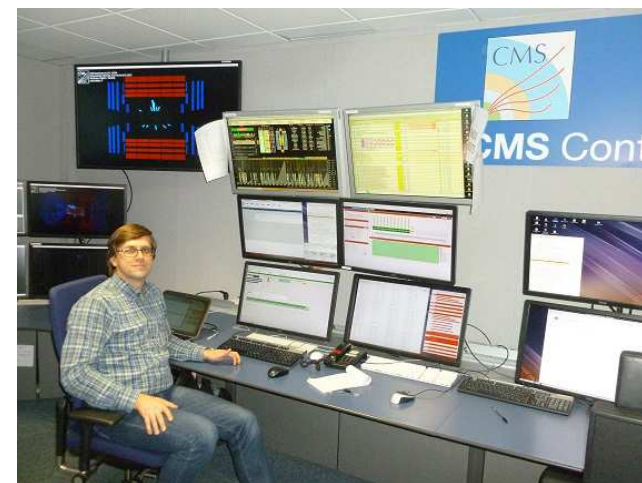
Science + some outreach



Some past activities in pictures (1/2)



2013
A. Jelinskas
helps HCAL
←



2015
DAQ shift in
CMS Control
Room



2016
Beam test of
GEM prototype
←



2016
LHC Interactive
tunnel at LitExpo
→

Some past activities in pictures (2/2)



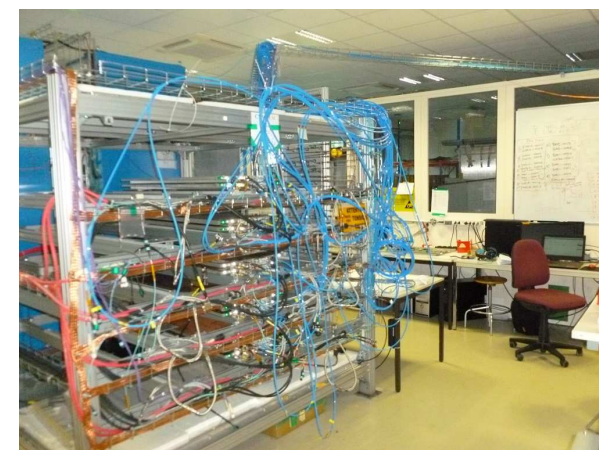
2016
„CERN:
Accelerating
Science“
exhibition in
Vilnius
←



2017
Assembling
CMS GEM
prototype
→



2017
VU BSc
student
„excursion“ to
CERN
←



2019
GEM Cosmic
stand DAQ
operator
→



Some recent activities in pictures



Home > News > Chile, Estonia and Lithuania Join SCOAP³ Consortium, Expanding Global Reach

Chile, Estonia and Lithuania Join SCOAP³ Consortium, Expanding Global Reach

May 6, 2024 | SCOAP³ Team



- I monitored the Lithuanian non-involvement in the SCOAP3 consortium since 2018, and under favorable circumstances pushed it forward in Fall 2023. I mediated the final signing of VU-CERN agreement on Lithuanian participation in SCOAP3 in 2024.

- [https://scoap3.org/chile-estonia-and-lithuania-join-scoap%**c2**%**b3**-consortium-expanding-global-reach/](https://scoap3.org/chile-estonia-and-lithuania-join-scoap%c2%b3-consortium-expanding-global-reach/)



Lectures for physics students



- Since 2014, there were several attempts to hold summer particle physics data analysis courses for BSc students
 - Two attendees in 2016 are currently PhD students (theoretician and experimentalist)
- In 2017, I defended the idea of introducing several courses for VU BSc students with an aim of strengthening particle physics teaching. The courses are:
 - Introduction to Unix systems (lecturer A. Juodagalvis since 2018)
One practical task involves installation of CMS OpenData docker file and using sample analysis to get a plot
 - Introduction to HEP data analysis (lecturer A. Rinkevičius 2019-2024, A. Juodagalvis from 2024.Apr)
 - Theoretical Particle Physics I and II (lecturer Th. Gajdosik added a second part in 2020)
 - Introduction to Machine learning (planned lecturer V. Rapševičius)
- Since 2018, I am a member of the CERN Baltic Group “Study Programme” work group
 - The joint master’s program between 5 Baltic universities is being discussed
 - Two new courses for MSc are planned at VU (advanced data analysis and physics object reconstruction)

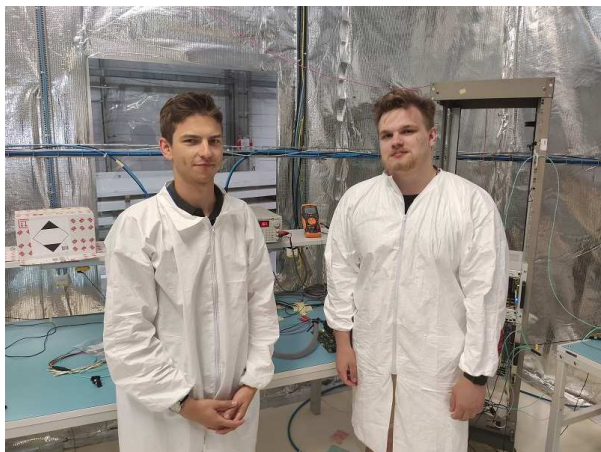


Current status of the Center

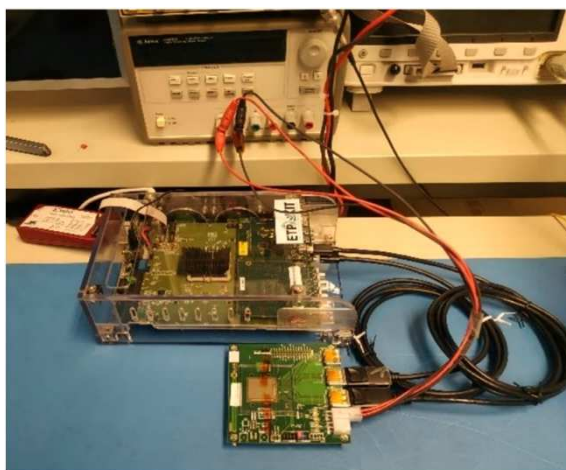


- Dr. A. Juodagalvis – director since 2024-04-02
- M. Macijauskas – staff and administrator since 2018
- Expert on Pixel module test „cold box“ – prof. V. Tamošiūnas (associated)
- Expert on Pixel module test software – PhD student M. Ambrozas
- Contributor to the CMS Pixel activities, “Pixel DOC” – PhD student N. Chyckalo
- IT specialists working on own CMS-related projects:
D. Šimelevičius, M. Stankevičius, V. Zokaitė
- Scouted 2-3 bachelor students to learn module testing and HEP data analysis

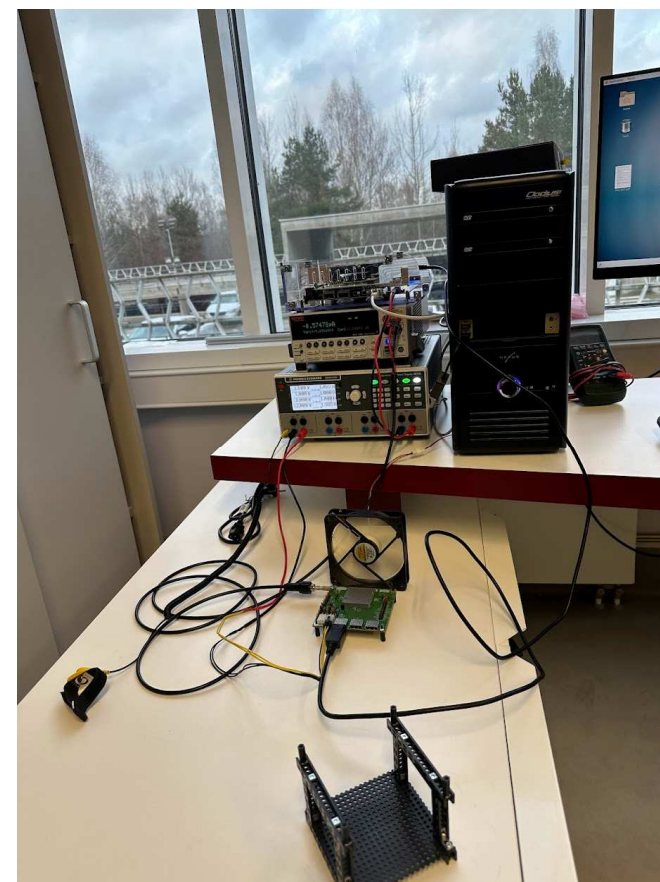
CMS Readout Chip test at CERN and VU



2022
M.Ambrozas
and K.Silius at
CMS inner
tracker
upgrade lab
←



2022
Test setup for a
CMS Read-out
chip at CERN
←



2023 December.
Test setup for a
CMS Read-out
chip on card
(green) at VU
→



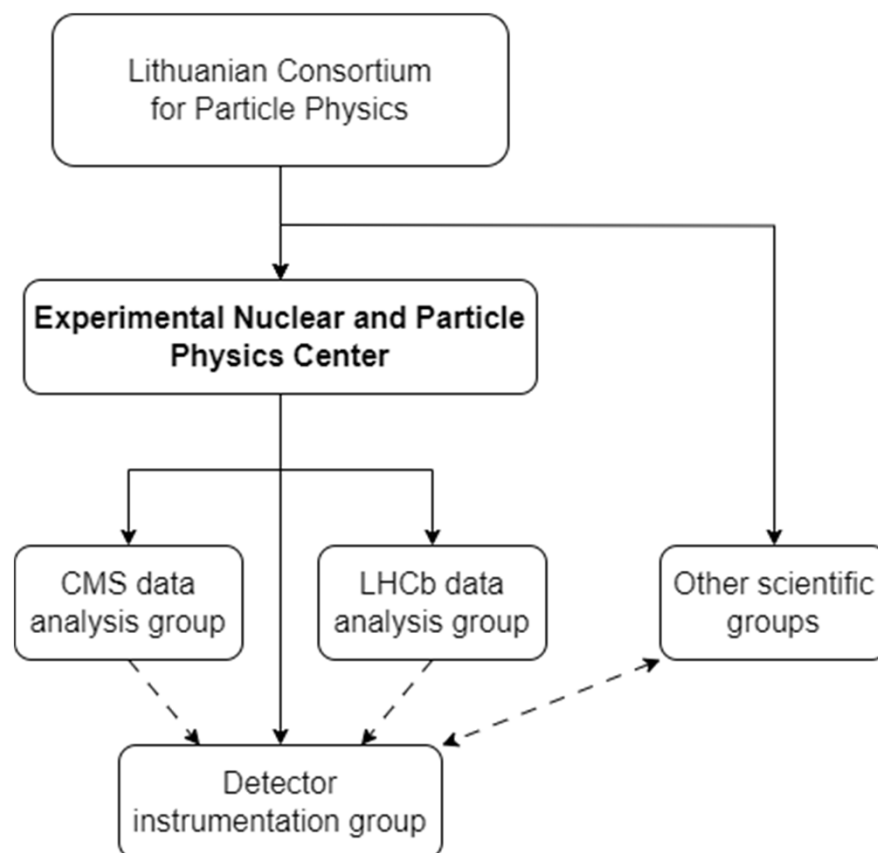
Current activities of the Center



- Contribute to the CMS Pixel Phase2 upgrades (TEPX modules)
 - Testing site is being established
- Contribute to CMS Run2 “Legacy” Drell-Yan differential cross-section analysis
 - PhD student M. Ambrozas (supervisor A. Juodagalvis)
- Contribute to CMS ttH differential cross-section analysis
 - PhD student N. Chyckalo (supervisor A. Rinkevičius)
- In parallel: procuring “PixelLab” construction and tooling, and searching for an alternative production site to avoid construction
- Reaching out to other VU groups who would be interested in instrumentation development



(Envisioned) Future of the center





Summary



- Experimental Nuclear and Particle Physics Center got a new director in April 2024
- Past activities are continued and new venues are being explored