



Lithuania and CERN: Quick Overview

CMS Subdetectors and Selected New Results

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Contents



Personnel

Projects

“Official” CERN Matters



Personnel



Personnel in High-Energy Physics



Approximate people count (VU so far):

- Faculty
 - Experimental particle physics – 2* (Tracker)
 - Theoretical particle physics – 2
- Non-faculty
 - Engineers – 0; technicians – 0; postdocs – 1 (theory)
 - PhD students: 1 (theory)
 - MSc students: 5 (1 in experiment and 2 in theory)
- Forecast
 - Expected average number of PhDs per year:
In HEP – 0.2
 - Postdocs – 1



Personnel in Related Areas



Approximate people count:

- Faculty
 - Computer & Data Science (CDS) – 1 (DBs/OMS/ML) @ VU
 - Material Science (MS) – 3 (MTD) + 1.5 (rad-hard Si) @ VU
 - Material Science (MS) – 1 (Surface coating) + 1 @ KTU
 - Medicine – 1 (Biomarker analysis) @ KTU/LSMU
- Non-faculty
 - Engineers – 2 (CDS); technicians – 0; postdocs – 1 (MS)
 - PhD students: 1 in CDS, 3 (1.5 FTE) in MS @ VU
 - PhD students: ? @ KTU
 - MSc students: ?
- Forecast
 - Expected average number of PhDs per year:
In MS – 1 + KTU
 - Joining CERN topics: 1 faculty



Lithuanians at CERN



Approximate people count:

- Faculty
 - Material Science – 1 (SC) @ LD CERN
- Non-faculty
 - HI TH fellow – 1
 - HR – 1 @ LD CERN
 - Engineers – 5 (CMS IT) + 1 jr. fellow
 - PhD students: 3 (ATLAS-ex), 2 (LHCb)
- Forecast
 - Expected average number of PhDs per year:
In HEP – ~ 1

SC: superconductivity, HI TH: heavy-ion theory



Projects



Hardware Projects in CMS



Currently engaged in, taken responsibilities:

- Ramping down GEMs, ramping up tracker
- Detector Construction Application (DCA)
- Database support for Outer Tracker and HGAL
- CMS construction database tools support
- MTD: scintillating material studies & quality control

Projects in the pipe (post/writing stage)

- ERC Stg (Rinkevicius)

Could be of interest, but no engagement yet

- TEPX
- EuroHPC / computing

Expertise

- Software: CMSSW, ROOT, DBs, online DAQ
- Scintillating & semiconducting material response and properties, thin films



Hardware Projects in Applications



Currently engaged in, taken responsibilities:

- Thin-film coating
- Isotopes for clinical use / biomarker analysis
- Radiation damage in semiconductors
- AIDA 2020: cryogenic semiconducting sensors

Projects in the pipe (post/writing stage)

- AIDA++ (ML as a service)

Could be of interest, but no engagement yet

- Hadron therapy (sensors + LINAC)
- Laser accelerators



Projects in HEP



Currently engaged in, taken responsibilities:

- Standard Model Physics (SMP) Drell–Yan
- Top, Higgs Physics, ttH
- Theory
 - Multi-Higgs doublet models
 - Heavy Majorana neutrinos, grand-unified theories (GUT)
 - Few-nuclei reactions

Projects in the pipe (post/writing stage)

- ERC Stg (Rinkevicius)

Could be of interest, but no engagement yet

- ttX properties ($X \sim H$), non-SM H, di-Higgs

Expertise

- Electrons, tops, MEM, particle property measurements



“Official” CERN Matters



Some Highlights



What happened recently?

- Kaunas and Vilnius have a CERN incubator
- Lithuania has an ILO and ILO assistant
- European Strategy is the current hot topic at CERN council

Baltics still need a representative to CMS computing board!