



UNIVERSITY OF TARTU



# ESTONIA: State of play

Research groups, existing actions, interests and collaborations

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PROFESSOR OF MATERIALS  
TECHNOLOGY

2024



# CERN – opportunities and challenges

Preparation and manufacturing of exotic materials

Computing

Social and cultural aspects

Advanced multi scale and multi physics materials modeling

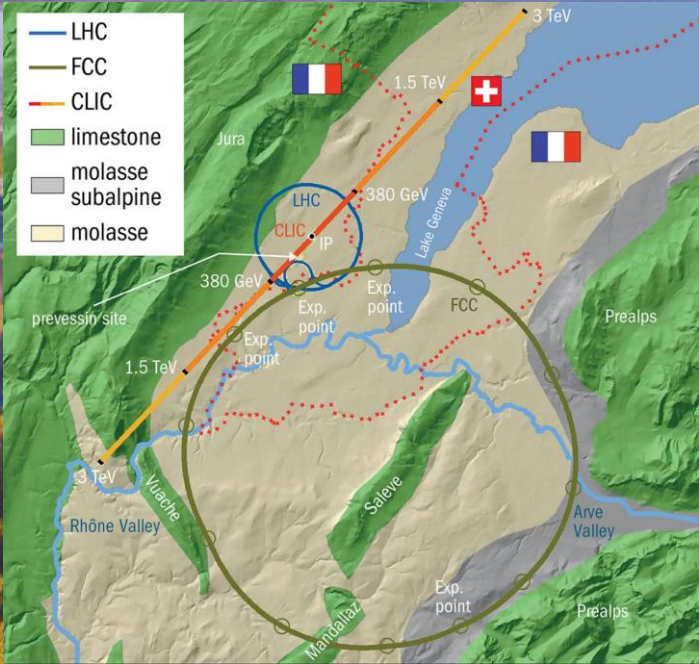
Climate Research

Education

Sensor/detector Technologies

Leadership, management, organization & economical aspects

Accelerator technologies



Theory

Microscopy and characterization of materials, surfaces and structures

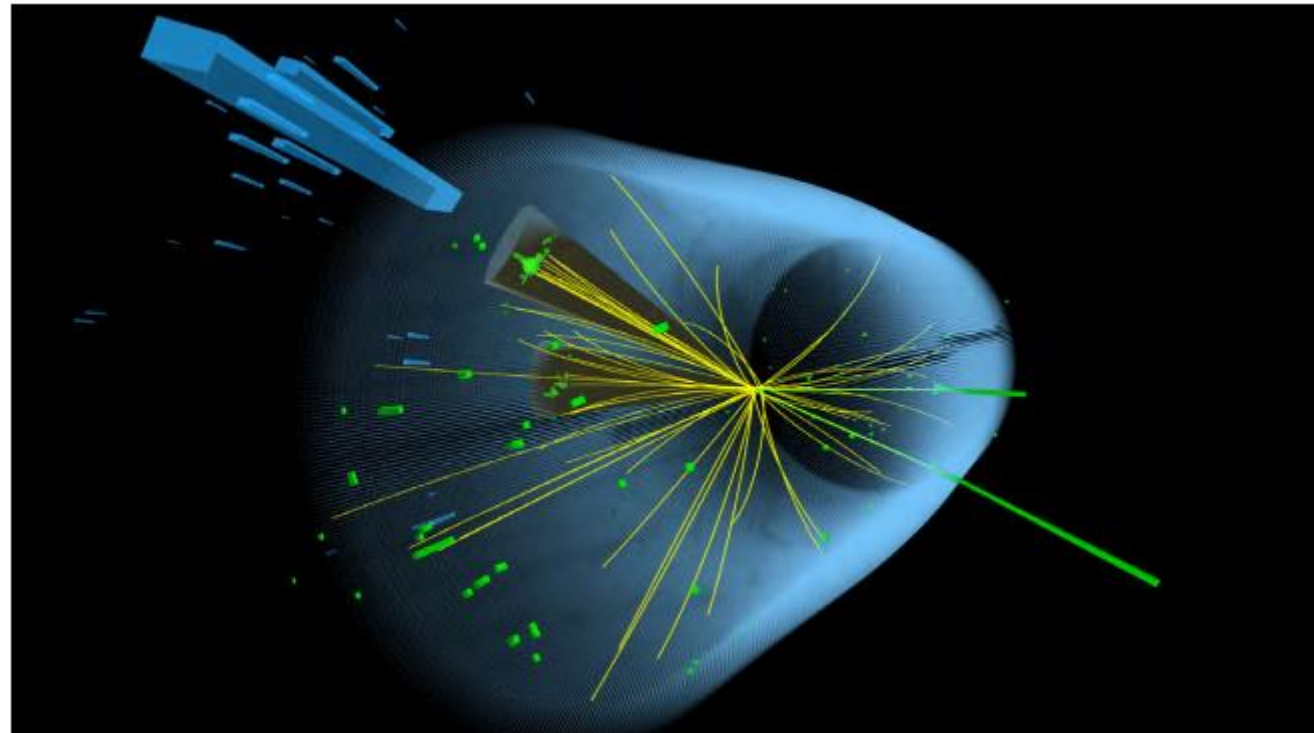
Robotics

Medicine, radiotherapy etc.

# Funding, Infrastructure, Strategy



- CERN continues on Estonian Research Infrastructures Roadmap
- NEW funding opportunities in coming years!



# Estonian CERN consortium



- The aim of Consortium is to ensure:
  - Ensure continuation of Estonian CERN research,
  - improve CERN research capacity in R&D institutions
  - Ensure participation in active CERN experiments
- Consortium communicates with state agencies, policy makers and companies
- Consortium forms Estonian CERN Scientific advisory board to advise Estonian CERN council in Ministry of Economic Affairs and to advise the policy makers
- Consortium coordinates current participation in CERN experiments
- Consortium has state funding and capacity to increase the funding for Estonian research infrastructure
- 2026 year action plan development (deadline 17.12.2025)
- Estonia CERN strategy/vision development for 2026-2036 (2040?).

# Funding and organization



- New financing instrument from behalf of Ministry of Education and Science.  
Competitive financing, 175€/year (2023), for participation in CERN actions.  
Funding increased ~30% for 2024
- CERN Consortium formed, active and working
  - members: NICPB, Tartu University, Tallinn University of Technology.
  - Lead partner for the first period – NICPB.
- Estonian CERN consortium first tasks
  - Estonian CERN strategy revision ongoing in Ministry of Industrial Affairs and Communication
  - **Application to the financing instruments: upcoming Estonian Research Infrastructures Roadmap.**
- Consortium Funding actions since October 2024:
  - **Success at funding Estonian CERN Science Roadmap object - 2 765 000,00 EUR**
  - **2 National Estonian Research Agency Grants 2x1.35 MEUR (UT)**
  - **EU Twinning Grant EXANST 1.3 MEUR (UT)**
  - **FinEstBeAMS Roadmap Object 1 180 000,00 EUR (UT, TalTech, NICPB)**
- \*utApplication for Estonian PRG Grant “Effective Approaches in the Theory of Heavy Hadrons”
- Run for EU Teaming Grant TERA-Science: Estonian CERN Research Centre (UT, TalTech, NICPB)

# UT research



- CLOUDi measurements session, September- December 2025.
  - Aerosol particles in higher layers of toposphere
- More strict regulations for participating in measurements, we need long-term planning and commitments.
- New PhD student starts in Tartu for CLOUD project on 1st of May 2025
- New MCSA ITN proposal in preparation for 15PhD within CLOUD
- COST Action “International Network on Hadron Physics“ in preparation, 46 participants
- AMBER/COMPASS Intensity Drell-Yan Test, 1 PhD student participating.
- Successful defense of 1PhD student
- Participation of CERN School of Computing Advisory board (Veronika Zadin)
- MEVARC 2025 conference in Uppsala presenting latest developments in CERN vacuum arcs studies
  - 5 presentations from UT
- Research results
  - **1 Nature article by CLOUD experiment public**

# PhD students



- Since 2022 PhD students are hired as junior researchers
  - State granted salary for 4 years
  - State average salary (currently 1981 €/month, growth 8,1%)
  - Work contract for the duration of PhD studies – minimum load 0.5, max 1.0.
    - Smaller work load extends studies
- Very strong pressure to finish in time
- Study plans are flexible, but 1 article per year (incl. 1<sup>st</sup> year is assumed)
  - 3 articles needed for finishing (1 first authorship)

# Research and education: NICPB(KBFI)



- CERN CMS MoU from 1996
- Work is ongoing with three analyses at the CMS experiment.
  - This year, two students defended their PhDs based on CMS analyses, and two students defended in theory.
- KBFI is currently renovating the CMS Tier 2 computing center and will purchase new computers next year.
- KBFI signed a "Memorandum of Understanding for the Terrestrial Very Long Baseline Atom Interferometer Study," which is a gravitational wave experiment likely to be built at CERN.
- The theorists are working on theory as usual (on daily bases);

# Research and education: TalTech



- **FCC MoU-s and addendums signed** with CERN by University of Tartu and Tallinn University of Technology
- **CMS Associated Member from August 2022**, Integration of energy storage in converters feeding particle accelerator magnets, incl. thesis co-supervision (**CERN EPC Group**)
- **DRD7 MoU will be signed in Q1 2025**
- **Second master student finished thesis at CERN Cryolab (Ott Salla, co-supervised by Patricia Borges de Sousa –*Technical Student from TalTech in cryogenics and mechanical engineering*) – defended in January 2025**
- **Ott Salla has applied for PhD position in CERN**
- **2 Ph.D student starts in 2025**
- **Partially funded from RVTT3 project**

Strong synergy with research in our new EU projects:

- Horizon Europe MSCA DN “TIRAMISU”  
(2024-2028, M. Jenihhin)
- Horizon Europe Twinning “TAICHIP”  
(2024-2027, M. Jenihhin)



TARTU ÜLIKOOL

Thank you for your  
attention!



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