

# FCC - Nordic countries

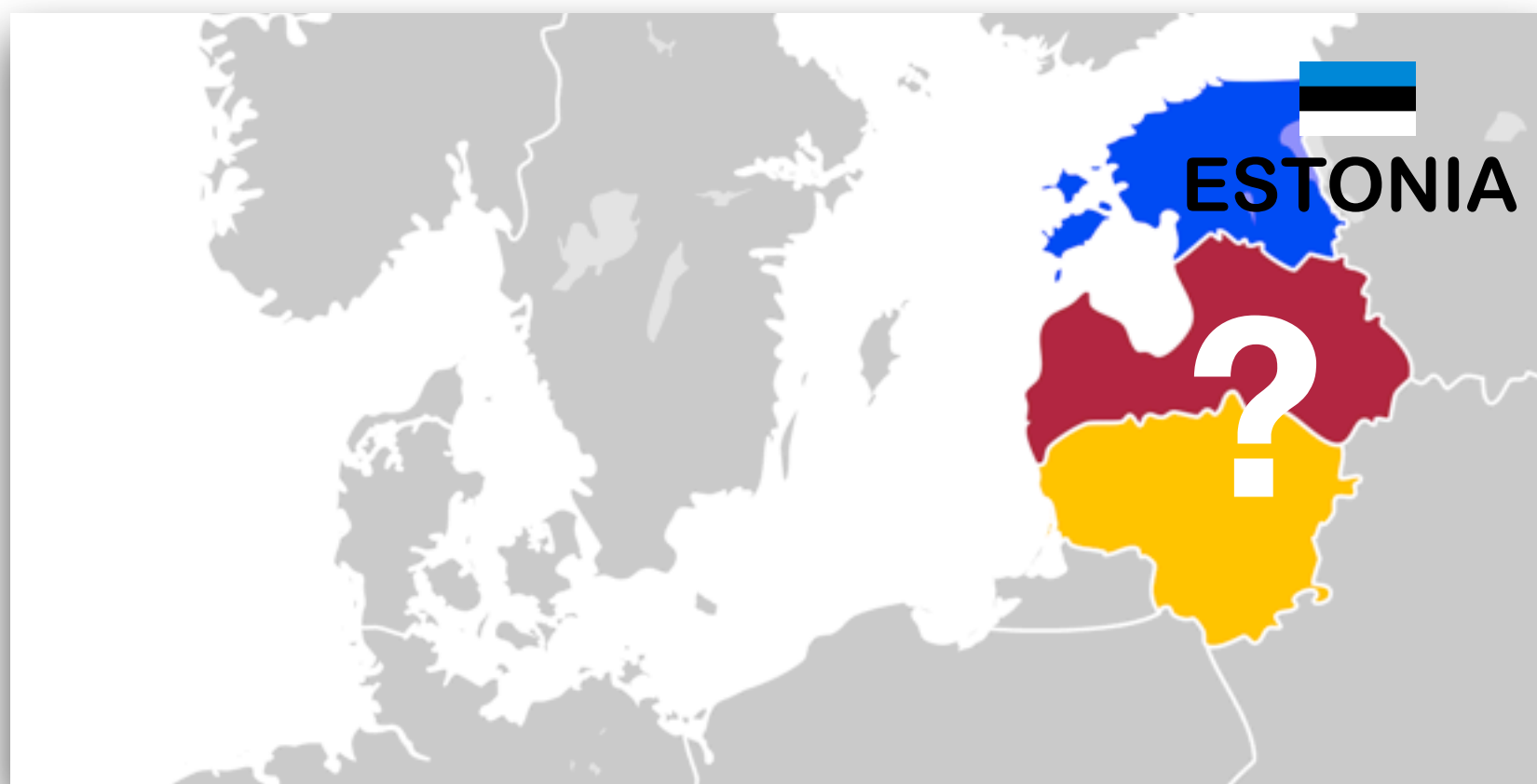
International Forum of National Contacts - 7th FCC Physics Workshop  
(Annecy)

Rebeca Gonzalez Suarez - Uppsala University

# Nordics and FCC

## Denmark, Norway, Sweden, Finland

- From the usual nordics we are missing Iceland
- Sometimes the Baltics are also counted in the nordics
  - We know there is **work ongoing in Estonia**
  - Do we have any presence in Latvia and Lithuania?



# Denmark

## The OG Nordic country in FCC



(National contact,  
institute contact)

- **Mogens Dam** ↔ Niels Bohr Institute, University of Copenhagen
  - **Co-convenership of the Detector Concept effort**
  - Key involvement in **luminosity measurement, contact to the MDI group**
  - **Convenership of the working group on detector costing** → input to the midterm report
  - **Two MSc students**, one working on LumiCal simulation the other on aspects of tau lifetime measurements.
- **Jørgen Beck Hansen** + **one MSc student** working on top studies.
- No efforts on other future colliders.

no dedicated funding for future collider efforts

# Norway

## Heidi Sandaker

(National contact)

- There are no activities on FCC at the moment, but there is **very much interest**.
  - **Part of the permanent staff worked on e<sup>+</sup>e<sup>-</sup> and/or is interested in Higgs physics.**
- Most permanent staff follow the FCC development to various degrees, but there are **no ongoing research projects now or planned in the near future**.
- Increased activities on the technology side may be of interest to FCC such as CO<sub>2</sub> cooling; groups for robotics or civil engineering could be interested.
- There is **no dedicated funding for FCC**, the ongoing discussion is to secure funding for the lifetime of the HL-LHC.
  - The current funding for general experimental activities related to CERN is given as a Norwegian Centre-for CERN-related research.
  - Currently in the process of writing a **Norwegian roadmap for CERN-related research**, which will be used to secure future funding.
- The Norwegian community is and has been involved in CLIC, ILC, ESS (in-kind contributions) and various fundamental accelerator research activities.

# Sweden

## Some news!



Swedish  
Research  
Council



- Following the **mid-term report**, Vetenskapsrådet, the main funding body of Sweden, created a reference group to follow the FCC process and European Strategy Update:
  - **Sara Strandberg**, Lars Bøjesson, Anders Karlhede, Lisbeth Olsson and Mattias Marklund.
  - Some initial feedback on the report focuses on:
    - Physics case, cost-estimates, environmental issues
- In connection with the RECFA visit to Sweden (Lund, May 16-17) → **future colliders discussion (ECSB) + FCC dedicated discussion on May 14, 2024**
  - <https://indico.cern.ch/event/1373946/>
  - More details to come soon

**Physics goals need to be made crystal clear to reviewers who are not particle physicists!**

# Uppsala

(National contact,  
institute contact)

Master theses:  
Rohini Sengupta,  
Lovisa Rygaard, M.  
Vande Voorde



- **Rebeca Gonzalez Suarez**
- Work continues around BSM options
  - **Co-convenership of BSM group**
  - Contribution to mid-term report
  - Contribution to notes for mid-term report
  - Related convener position in **ECFA** Higgs factories WG1
- **Richard Brenner** involved in detector development
- **Postdoc** partly funded to work on FCC (Giulia Ripellino)
- **PhD student** (Axel Gallén) working on Exotic Higgs with Giulia and Magda (from KTH), **visiting PhD student** (Baibhab Pattnaik)

Also presenting this week! [\[link to the talk\]](#)

# KTH



(Institute contact)

- **Christian Ohm**
  - Sweden National contact for ECFA Detector R&D Roadmap
  - Interest in the group ramping up
  - **One PhD student** (Magdalena Vande Voorde) working on exotic Higgs decays to LLPs
    - **Presentation this week, working towards a paper** [\[link to the talk\]](#)



# Stockholm University

(Institute contact)

- **Christophe Clément**
- **Postdoc position to be announced before the summer**
- **Expecting at least one master student 2024**
- Interest in detector layout studies and BSM Higgs sector physics with multiple neutral scalars



Stockholm  
University

# Lund

(Institute contact)

- **Else Lytken**
- FCC not under discussion at the moment



LUNDS  
UNIVERSITET

# Finland

## Kenneth Osterberg

(National contact,  
institute contact)

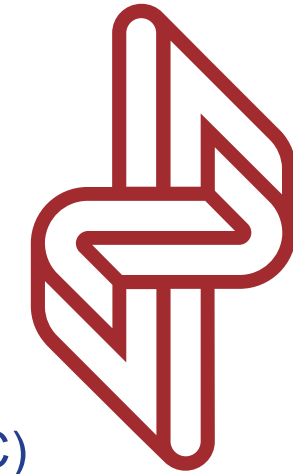
- No PED activities and no concrete plans.
- **No funding for PED activities**, difficult to motivate people to join.
- Currently doing **strategy planning for Particle Physics in Finland, ending Spring 2025**.
  - FCC PED activities to be brought up to see whether support and funding can be dedicated for FCC PED activities.
- **Some FCC accelerator-related activities** → material science for thin film deposits on superconducting cavities.
- Finland has still some connection to CLIC on physics modelling of the RF cavity surfaces under high electric and magnetic fields, but this is much smaller than it used to 5-10 years ago.
- No other future collider activity in Finland.



# Estonia

## Mario Kadastik & Joosep Pata

Laboratory of High Energy and Computational Physics (HEPC)



- Getting started, **no students or postdocs on FCC yet** but there is intention to change that
- Experience built with **Key4HEP sim+reco**
- Plans to participate / help out with FCC software development, specifically taggers and reconstruction.
  - Two recent, relevant papers that rely on Key4HE done with the CLIC setup:
    - ML-based tau reco: <https://authors.elsevier.com/a/1iT120InroMt>
    - ML-based PF reco: <https://arxiv.org/abs/2309.06782>
    - These studies will be re-done for FCC soon
- Will soon start participating in the working groups

# Summary

## Of the Nordics

- Work already in place continues in Sweden and Denmark
- Interest raising everywhere else
- More contacts in place (see slides)
- Involvement of funding agencies in Sweden has started
  - **There is no funding for this anywhere, which makes starting projects complicated**
- 14th of may, FCC-centric meeting in Sweden in connection with RECFA visit
- Latvia and Lithuania?