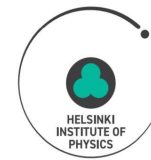

RECFA midterm report - Finland

— Kati Lassila-Perini —
Helsinki Institute of Physics
13.07.2020 ECFA plenary

RECFA visit to Finland 18-19 May 2017



Agenda

Friday meeting: RECFA Open Session

- 09:00** **Welcome**
Speaker: Keijo Hämäläinen (Vice-Rector, University of Helsinki)
- 09:05** **Welcome**
Speaker: Riitta Majjala (Vice-President for Research, Academy of Finland)
[0905_Decision maki...](#) [0905_Decision maki...](#)
- 09:15** **Introduction: HEP in Finland**
Speakers: Paula Eerola (Helsinki Institute of Physics), Paula Eerola (Helsinki Institute of Physics (FI))
[recfa-finland-overvi...](#) [recfa-finland-overvi...](#)
- 09:55** **CMS and TOTEM experiments**
Speaker: Mikko Voutilainen (Helsinki Institute of Physics)
[recfa_2017_05_19_...](#)

RECFA Open Session

- 11:00** **School activities, outreach and open data**
Speaker: Kati Lassila-Perini (Helsinki Institute of Physics (FI))
[1100_education-Las...](#)
- 11:20** **ALICE experiment**
Speaker: Jan Rak (University of Jyväskylä (FI))
[1120_Rak-RECFA-2...](#)
- 11:50** **Accelerator technology**
Speaker: Kenneth Osterberg (University of Helsinki)
[KO_RECFA_2017_ac...](#) [KO_RECFA_2017_ac...](#) [KO_RECFA_2017_ac...](#)

RECFA Open Session

- 13:30** **Theory**
Speaker: Alekski Vuorinen
[RECFA17.pdf](#) [RECFA17.pptx](#)
- 14:10** **Cosmology**
Speaker: Syksy Räsänen (University of Helsinki and HIP)
[1410_RECFA_cosm...](#) [1410_RECFA_cosm...](#) [1410_RECFA_cosm...](#)
- 14:40** **ISOLDE and FAIR, Jyväskylä Accelerator Laboratory**
Speaker: Ari Jokinen (University of Jyväskylä (FI))
[1440_AJokinen_RE...](#) [1440_AJokinen_RE...](#) [1440_AJokinen_RE...](#)

RECFA Open Session

- 15:50** **Applied projects: NINS3 and radiation metrology**
Speaker: Teemu Siiskonen (Radiation and Nuclear Safety Authority (STUK))
[1550_Siiskonen_EC...](#) [1550_Siiskonen_EC...](#)
- 16:20** **Technology transfer and industrial activation**
Speaker: Pietari Kauttu (Helsinki Institute of Physics (FI))
[CERN Knowledge Tr...](#) [FI Companies Colla...](#) [FI Companies Colla...](#)
- 16:50** **Student view**
Speaker: Jennifer Ott (Helsinki Institute of Physics (FI))
[JO_RECFA2017_v2...](#)

Research areas

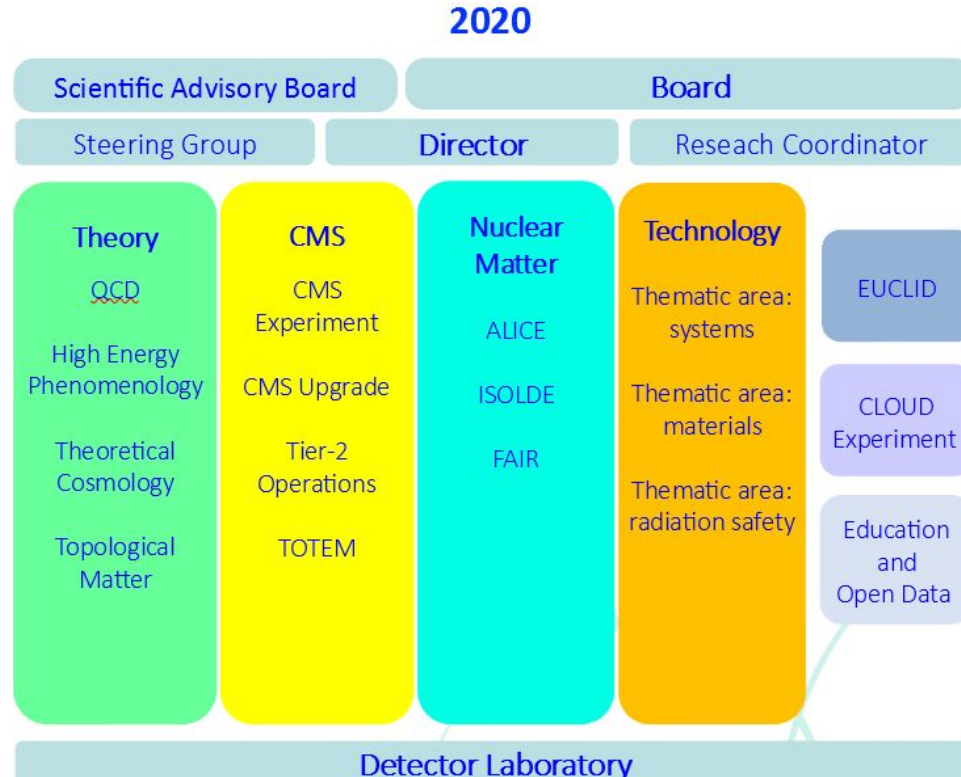
Theory: LHC physics, gravitational waves (LISA), cosmology (EUCLID), mathematical physics, FAIR physics, materials physics

CMS and Nuclear matter: particle and nuclear matter experimental collaboration with CERN, FAIR construction and starting experiments

Technology: technology development connected to experimental activity, BIC

Other projects: CLOUD – laboratory study of cloud formation at CERN

Researcher education, societal impact



Goals for 2017-2021



Recent CMS highlights:



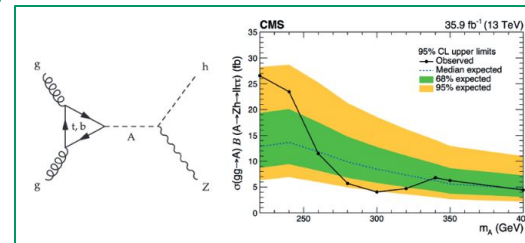
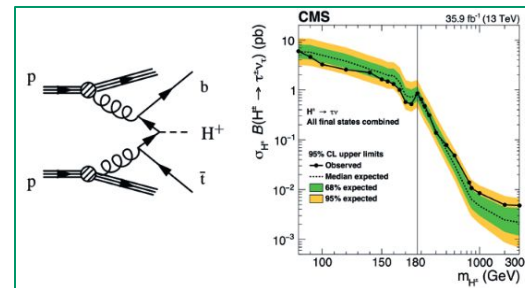
THE NEXT FIVE YEARS 2017-2021

IN 2017

- Full exploitation of CMS and ALICE runs 2 and 3
- Secure funding for Finnish contributions for CMS and ALICE Phase-2 upgrades
- Further development of Cloud-computing resources and joint Nordic computing facilities
- FAIR facility and experiments: in-kind contributions, ramp up experimental activities
- Improved industrial return from CERN, reinforced technology transfer activities and project work (BIC, IdeaSquare, Aalto Design Factory, ATTRACT)
- Maintain present level of school activities, develop further open data exploitation
- HIP renewal: potential new HIP partners: STUK, VTT; potential synergies with neighbouring research fields (eg. fusion research)

NOW:

- ✓
- ✓
- ✓
- ✓
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- ✓



PhD theses by S. Laurila and J. Heikkilä 2019

Goals for 2017-2021



Recent Alice highlight:



THE NEXT FIVE YEARS 2017-2021

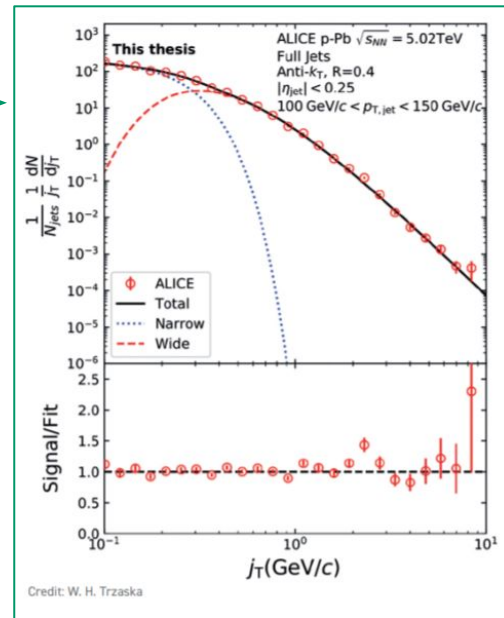
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P. Ferola

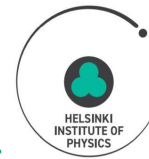
19.5.2017 28

NOW:



PhD thesis by T. Snellman 2019

Goals for 2017-2021



Recent FAIR highlight:



THE NEXT FIVE YEARS 2017-2021

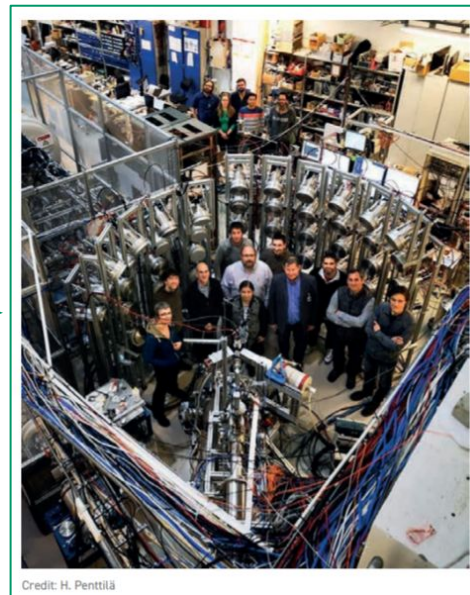
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P. Ferola

19.5.2017 28

NOW:



Credit: H. Penttilä

MONSTER neutron detectors were tested and exploited at the Accelerator Laboratory of the University of Jyväskylä as a part of the FAIR Phase-0 experimental campaign

Goals for 2017-2021



THE NEXT FIVE YEARS 2017-2021

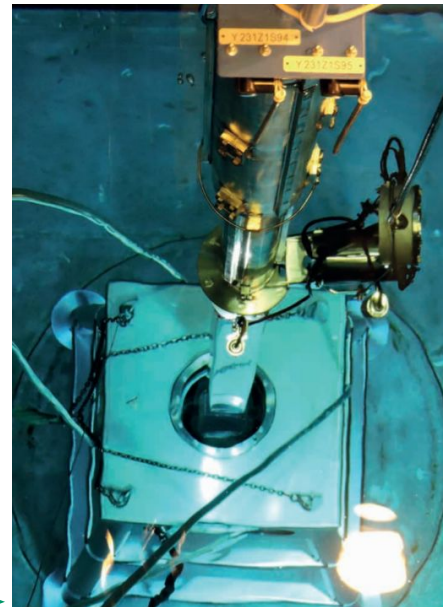
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NOW:



New topics:



Joint project with the Finnish Radiation and Nuclear Safety Authority, a first test at an interim fuel storage facility of the PNAR and PGET devices.

RECFA feedback



Positive feedback and full support for

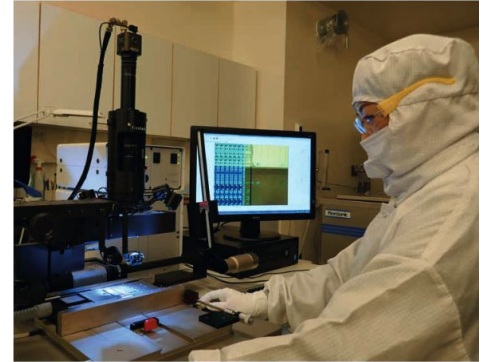
- Central coordination of research at CERN and FAIR through Helsinki Institute of Physics (HIP)
 - HIP has five member universities (the Universities of Helsinki and Jyväskylä, Aalto University, and the Tampere and Lappeenranta Universities of Technology) and is hosted by the University of Helsinki.



Topics addressed in the RECFA report



- “contribution to the upcoming phase-2 upgrade to be secured”
 - Part of the required funds have been granted
 - More will be applied in 2021
- “broaden the scope of the research into areas such as neutrino physics or the science of e-e+ colliders”
 - We contribute to the R&D studies for CLIC- and FCC-colliders
 - Participation in neutrino physics experiments has not been increased.
 - Finnish researchers participate actively in the gravitational wave mission LISA.
 - Participation in dark matter experiments is under study.



A. Gädda reworking a CMS pixel module with the Kumpula Detector Laboratory flip-chip bonder. Credit: J. Ott.

Topics addressed in the RECFA report

- “consider long-range planning for the Finnish HEP community”
 - The long term strategy of HIP, coordinating the Finnish HEP community activities, has been finalized this year.
- “The cooperation between Finnish theorists and experimentalists could be expanded”
 - In principle, [HIP seminars](#) could be a common discussion forum, but this remains an area to be improved
- “encourages further development of relations between the astronomy and particle physics communities”
 - Participation in LISA mission
 - HIP presents Finland in ApPEC

APPEC MoU signing. Credit: K. Link, APPEC.



Topics addressed in the RECFA report



- “underlines the need for a well supported Industrial Liaison Officer”
 - Despite efforts, this has not been solved
- “encourages the development of accelerator education for graduate students”
 - To be followed up
- “provide sufficient computing and storage resources for the next decade and beyond”
 - National infrastructure funding has been received for a short-term demand

Topics addressed in the RECFA report



- “highly appreciates the vital support from the Finnish National Agency for Education for the national CERN high-school network and hopes that this support will be maintained at the current level”
 - The support has been constant, reapplied every year



- “recommends help for PhD students to organise themselves into an association covering all Finnish sites and research projects”
 - Forming the RECFA ECR panel could give a positive impact on this

Conclusions



- The RECFA report for Finland was very positive
 - We have continued on the same path with
 - Focused experimental particle physics program: CMS and Totem
 - Active nuclear matter research: Alice, Isolde and FAIR
 - Vibrant theory program
 - Technology program for related to HIP and big science
 - Special projects: Cloud, Euclid, Open data in education
- We have reviewed the recommendations in the RECFA report
 - Most of them have been addressed
 - This midterm report has served us as a good reminder to check the status of the remaining issues.