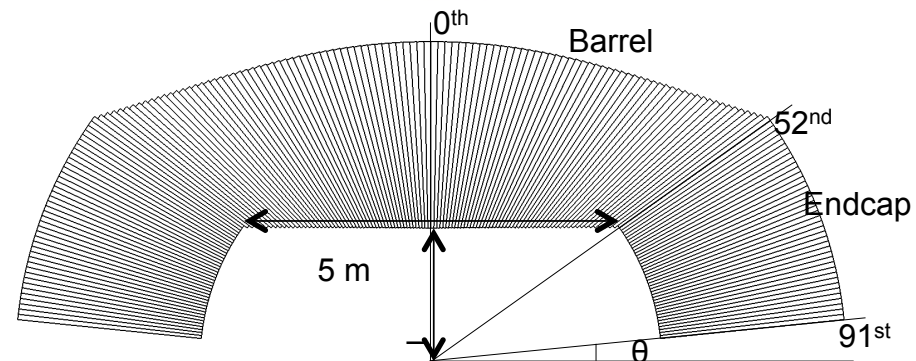
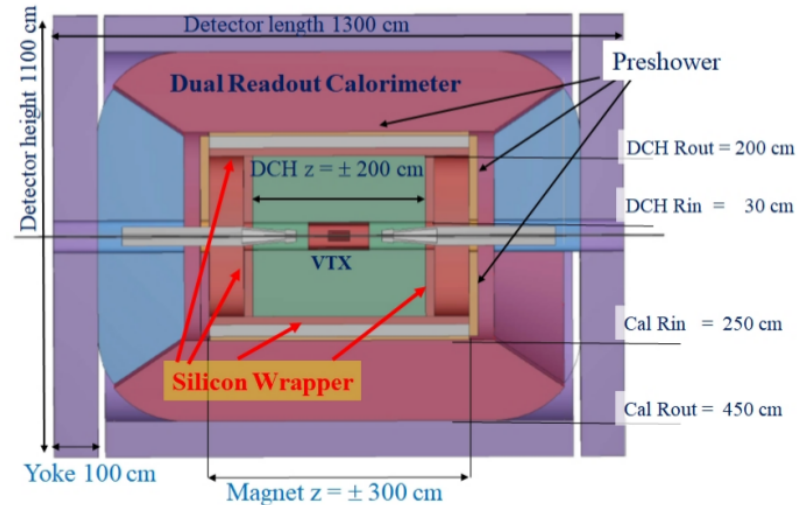
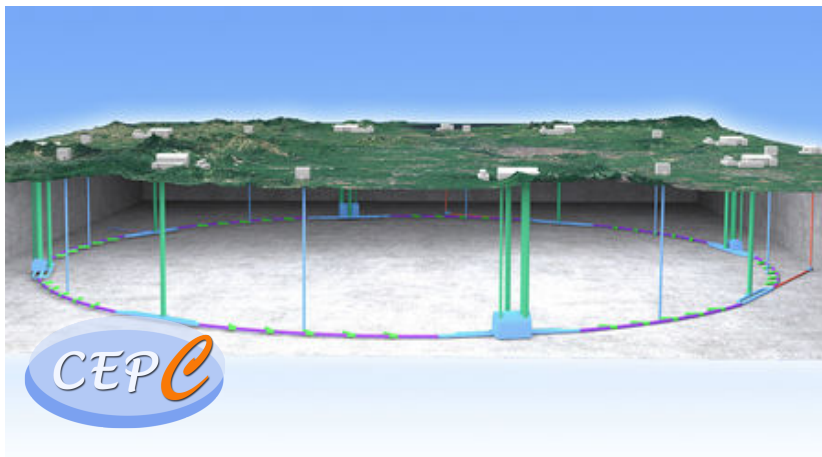




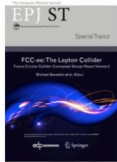
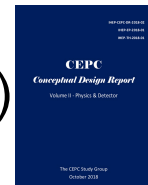
Hwidong Yoo
Yonsei University

Status for Dual-Readout (DR) Calorimeter in Korea



History

- Stage 0: core contribution to RD52 project
 - Sehwook Lee at TTU with Richard Wigmann (TTU) & John Hauptman (ISU)
 - Rev. Mod. Phys. 90 (2018) 025002
- Stage 1 (2017-2018): design current DR calorimeter for CEPC
 - Sehwook Lee + 1 M.Sc. student (KNU)
 - Hwidong Yoo + 1 undergraduate internship student (SNU)
 - Major contribution of CEPC and FCC-ee CDRs
- Stage 2 (2019 – present): further study of DR calorimeter for CEPC towards TDR
 - Sehwook Lee (KNU)
 - Sanghyun Ko (SNU): Ph.D. student
 - Hwidong Yoo (YU) + 1 M.Sc. student
 - 2 undergraduate students newly joined! (will continue in Ph.D program from next year)



FCC-ee:
The Lepton Collider

+ 200 cores from SNU
+ 200 cores from KNU
+ 300 cores from KISTI





My Profile

- Join CMS experiment in 2008
 - Detector
 - Author of Level-3 muon trigger algorithm: Cacaste (2010 – 2016)
 - My team (postdoc, students) is main authors of the updated Level-3 muon trigger algorithm: Iter3 (2017 – present)
 - Muon trigger upgrades at HL-LHC
 - Physics
 - EXO searches: Z' (dilepton, multilepton), Z gamma, excited lepton
 - SM precision measurements: Drell-Yan and W/Z diff. cross sections
 - About 10 papers published as primary authors in CMS since 2017
- Dual-readout calorimeter: 2017 – present
 - With Prof. Sehwook Lee
 - Fund in Yonsei Univ.: max \$150k / 3 years (2019 – 2021)
- Short term project related to CEPC
 - Trigger with AI: KR-UK joint fund (~\$150k/1.5 year), with A. Tapper (ICL)
 - Trigger for FC: UNIGE-Yonsei joint fund (~\$10k/year) with A. Sfyria (UNIGE)

KR-TW joint fund (2016-2018)
with C. M. Kuo (NCU): ~\$20k





Current & Future Collaborators

- Current

- Korea 
 - Yonsei Univ.: Hwidong Yoo, Youngjoon Kwon
 - KNU: Sehwook Lee
- USA 
 - Iowa State University: John Hauptman

Please express
your interest and
join us!!

- Express interest and want to join this project in near future




- Korea: 
 - Korea Univ.: Suyong Choi
 - KNU: Chang-Seong Moon, Hwanbae Park
Hyunseok Cho
- Japan 
 - University of Tokyo: Yuji Enari
- China 
 - ?
- Taiwan 
 - NTU: Rong-Shyang Lu
 - NCU: Chia-Ming Kuo

- RD52 collaboration

- Texas Tech.: Richard Wigmans (retire at 2020)
- INFN: Roberto Ferrari (Pavia) and many others
- Univ. of Sussex: Iacopo Vivarelli

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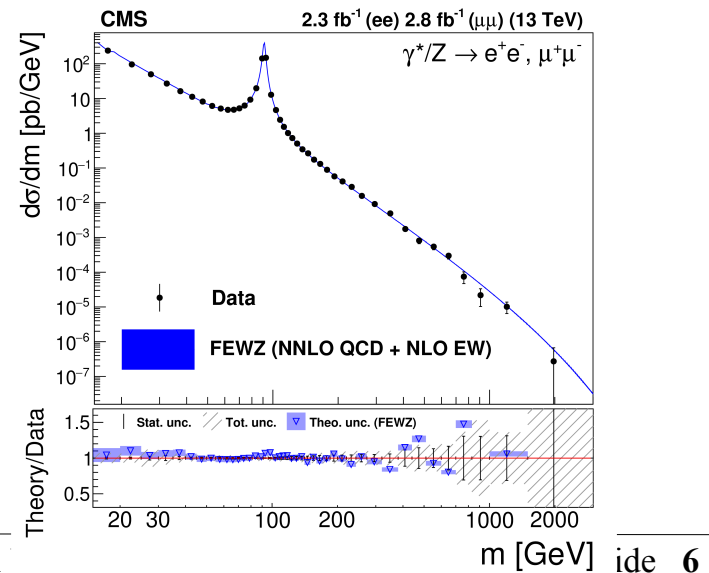
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Korea-CMS Collaboration

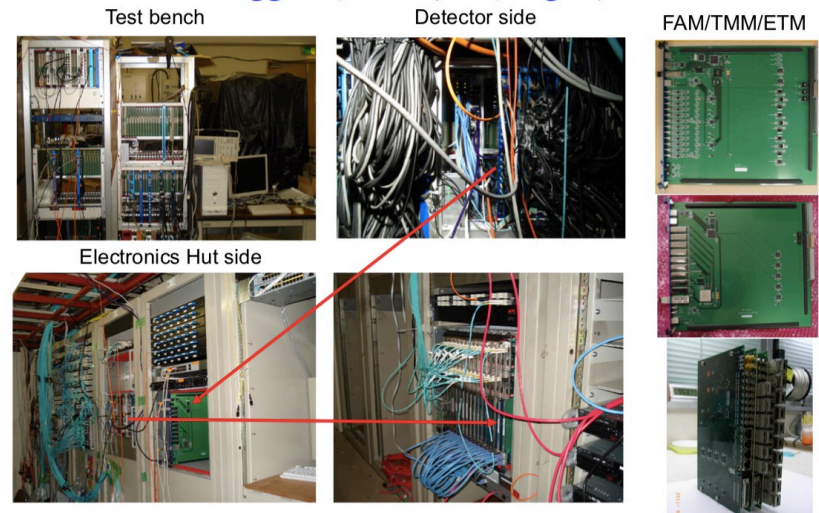
- Biggest exp. collaboration in Korea
 - 9 institutions: 18 faculties, 20 post-docs, ~70 Ph.D. students (+9 tech. staffs)
- Detector: RPC, GEM, trigger
- Very active for data analysis (over 10% of entire CMS publications)
 - EXO searches: Z' , heavy neutrino, excited lepton, SUSY
 - Top quark property
 - SM precision measurement
 - Heavy ion
- Aggressive activities on ML



Korea-BELLE Collaboration

- Very successful exp. collaboration in Korea
 - 9 institutions: 11 faculties, ~3 post-docs, 20-30 Ph.D. students
 - **Current Belle co-spokesperson** (2018-present): Prof. Y.J. Kwon (Yonsei. Univ.)
 - Former physics coordinator (2010-2018)
 - **Former Belle II IB Chair** (2013-2015): Prof. E. I. Won (Korea Univ.)
 - **Hoam prize** (2017): Prof. S.K Choi (Gyeongsang NU)
 - Discover X(3872), Y(3940), Z(4430) particles
- Detector: trigger, DAQ and monitoring, vertex detector
- Exotic hadrons, dark-sector search, B and Charm rare decays etc.

Belle II Calorimeter Trigger System (Hanyang U.)



Summary & Plan

- CEPC (+FCC-ee) activities in Korea have grown in a couple of years
 - Study on dual-readout calorimeter toward TDR with collaborators
- Aim to extend the collaboration and activity in 2020
 - Variety of local and international collaborations with strong experts
 - Extend to R&D for the relevant systems on the dual-readout calorimeter: trigger, electronics, software, etc.
- Applying big and stable funds to answer questions for TDR
 - Projective size of dual-readout calorimeter (about 49 modules, no shower loss)
 - Soft fund is available
 - Various joint funding opportunities between Korea and China (& many other countries): please contact me if interested!
- Building up tutorial program
 - For new comers for dual-readout calorimeter project in near future