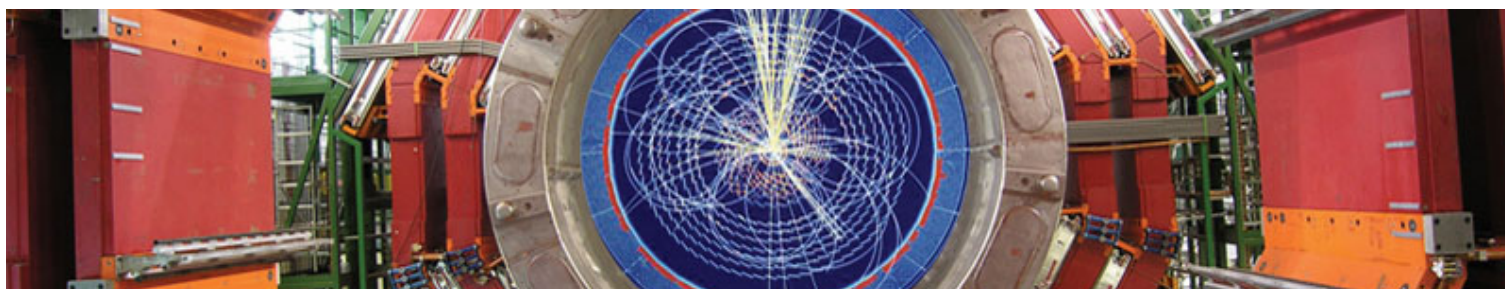




Round Table Discussion



Hwidong Yoo
Seoul National University

1st KR-LHC TH-EXP cross seminar, April 4th 2017

Things to Discuss

- Format of seminar
 - Cross-seminar style: one experimentalist and one theorist discuss one topic with free format (slides, black board etc.)
- How often
 - Initially once per two months (targeting to March and May in this semester)
 - May 26th for next seminar? (the week after LHCP2017)
- Topics
 - Any suggestion is welcome
 - Start from LHC and extend to FCC physics
 - Post what you want to discuss for next (and future) seminar in the google group

KCMS Activities

- First of all I do not (can not) count all experimental activities but I summarize what I know and what theorists may be interested, I THINK
 - You should communicate each other if you want to get more information
- SNU
 - Prof. Un-ki Yang
 - Heavy neutrino search: various channels in leptonic decay (John Almond)
 - Charged Higgs search: $H^\pm \rightarrow cb$ (Geumbong Yu, Inseok Yoo)
 - Initial state radiation of Drell-Yan
 - Prof. Hwidong Yoo
 - Drell-Yan differential cross section measurement
 - Search for Z' in dilepton channel (Benjamin Radburn-Smith)
 - Search for Z' decaying into 4 lepton channel
 - Search for $Z\gamma$ in leptonic channel
 - Search for excited lepton in $\ell\gamma$ channel

KCMS Activities

- KNU

- Prof. Dongchul Son, Guinyun Kim
 - Various $H \rightarrow WW$ measurement (Sangeun Lee)
 - W/Z pt ratio measurement (Sangeun Lee)
 - SUSY Razor search (Sezen Sekman)
- Prof. Dong Hee Kim
 - VBF SUSY search in tau channel (Minsuk Kim)
 - Search for $W' \rightarrow l\nu$ (Youngdo Oh)
 - Search for $Z' \rightarrow d\tau$ (Youngdo Oh)
 - Search for WR to tau + HN
 - VBF Zgamma measurement (Yuchul Yang)
- Prof. Sehwook Lee
 - $T\bar{t}$ CP violation
 - SUSY Razor search
 - Search for excited lepton in $l\gamma$ channel
 - Lead the design of CEPC Hadron calorimeter detector

KCMS Activities

- KNU

- Prof. Chang-Seong Moon
 - Search for Dark Matter in mono-jet
 - Interesting in $t\bar{t}H$ and HH production

- Korea U

- Prof. Suyong Choi
 - $T\bar{t}b$ differential cross section measurement (Younjung Roh)
 - Four top search
 - $T\bar{t}b$ CP violation
 - Boosted top tagging using deep learning algorithm

- Hanyang U

- Prof. Taejeong Kim
 - $T\bar{t}bb$ Measurement (Javier Brochero)
 - Search for FCNC (Jeonghwan Goh)
 - RPC upgrade for HSCP search, deep learning algorithm

KCMS Activities

- SKKU
 - Prof. Youngil Choi
 - Search for H^{++}
 - $T\bar{t}$ differential cross section measurement
 - Prof. Intae Yu
 - $T\bar{t}$ differential cross section measurement
 - Search for Black hole
- Sejong U
 - Prof. Hyunsoo Kim
 - Top physics
- U of Seoul
 - Prof. Inkyu Park, Sanghoon (Jason) Lee
 - Color coherence measurement (3 jets)
 - Search for $H \rightarrow \mu\mu$
 - $T\bar{t}$ differential cross section measurement
 - Top decaying to J/ψ (Jihyeon Kim)
 - Jet-tagging for quark-gluon id

Strategy for Near Future

- Need to analyze big dataset promptly
 - Due to limitation of CMS resources (computing, storage, person-power etc.) they mostly don't wait for us to THINK something new
- If we don't observe anything?
 - Indirect search using SM precision measurement
 - Direct search with pin-point model: use specific benchmark model
 - Currently model-independent approach is preferred
 - Long Shutdown will be useful period to test new idea/approach and catch up the leading group in similar channel
- What's important for experimentalists?
 - Final state = which objects in the channel (easy to analyze datasets using current machinery in our hands)
 - Model file for signal MC production

Physics Analysis in CMS

- When we launch new analysis in CMS, we face following questions
 - Physics interesting
 - Overlap of analysis strategy with existing analysis
 - Expected result whether it is feasible with current (or near future) dataset: feasibility study is needed
 - Trigger already existing
 - Person-power: is it possible to finish within reasonable time
 - Objects under your control
- Technical procedure
 - Presentations in internal CMS meetings
 - Review procedure: Pre-approval => ARC review => Approval => CWR => FR
 - Approximately: 2 year (measurement), 1 year (search) on average