CERN-Korea Theory Collaboration

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(KPS/Kyung Hee U.)

- ✓ Activities (Apr 2018~Oct 2018)
- ✓ Plans for 2019

23rd CKC Meeting on 29 Oct (Mon), 2018 at CERN

Present Team

[17=6+1+10]

Nakwoo Kim	Kyung Hee	Steering/Chair	S
Hyun Min Lee	Chung-Ang	Steering	S
Deog-Ki Hong	Pusan	Steering	P, H
Su Houng Lee	Yonsei	Steering	H
Piljin Yi	KIAS	Steering	S
Hyung Do Kim	SNU	Steering	P
Jae Sik Lee	Chonnam	Steering/Ex-officio	P
Hang Bae Kim	Hanyang		C
Seok Kim	SNU		S
Sangmin Lee	SNU		S
Seong Chan Park	Yonsei		P
Seung J. Lee	Korea		P
Soonkeon Nam	Kyung Hee		S
Ki-Young Choi	SKKU		C
Seong Youl Choi	Chonbuk		P
Sungjay Lee	KIAS		S
Seongtae Cho	Kangwon		H

C: Cosmo, H: Hadron, P: Particle, S: String

Annual Budget

(For Mar 2018 ~ Feb 2019)

[1 CHF = 1142 KRW]
[500M KRW ~ 438,000 CHF]

Program	Budget
CERN Fellows Graduate Students TH Institutes	430 M KRW
Other activities	70 M KRW
Total	500 M KRW

10 CERN fellows supported so far

Name	Period	Position	Current Position
Hyun Min Lee	2010. 1 ~ 2012. 5	Fellow	Chung-Ang (Faculty)
Chul Kim	2010. 2 ~ 2011. 1	Fellow	Seoultech (Faculty)
Jin Ouk Gong	2010.10 ~ 2012. 9	Fellow	KASI (Staff)
Myeonghun Park	2011.10 ~ 2013. 9	Fellow	Seoultech (Faculty)
Chan Beom Park	2012.10 ~ 2014. 9	Fellow	IBS (Research fellow)
Ian-Woo Kim	2013. 9 ~ 2015. 8	Fellow	UpHere, Inc. (Founder)
Hye-Sung Lee	2014. 8 ~ 2015. 7	Fellow	KAIST (Faculty)
Ji-Haeng Huh	2015.10~ 2017. 9	Fellow	
Hee Seok Chung	2016.04 ~ 2017. 8	Fellow	Humbolt Fellow (Munich)
Doojin Kim	2016.09 ~ 2018. 8	Fellow	Arizona U. (Postdoc)

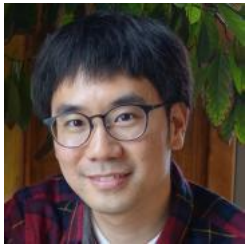
10 visiting students so far

Name	Period	Current Position
Jihun Kim	2010. 9 ~ 2011. 2	UpHere, Inc. (Researcher)
Doyoun Kim	2010. 9 ~ 2011. 2	IBS-CTPU (Research fellow)
Kwangwoo Kim	2011. 9 ~ 2012. 2	Jlab (Senior researcher)
Imtak Jeon	2011. 9 ~ 2012. 2	King's College London (Postdoc)
Sung Hak Im	2012.10 ~ 2013. 2	IBS-CTPU (Research fellow)
Do Young Mo	2014. 2 ~ 2014. 8	UpHere, Inc. (Researcher)
Dong Woo Kang	2015. 4 ~ 1015.10	Yonsei (Grad. Student)
Dongwook Ghim	2017.04 ~ 2017.09	KIAS (Postdoc)
Youngbin Yun	2017.04 ~ 2017.09	FN pricing (Employee)
Hyungjoo Kim	2018.03 ~ 2017.08	Yonsei U (Grad. Student)

Activities (May 2018~Oct 2018)

2 CERN Fellows at Work

- **Seung-Joo Lee (17'~19')**
- **Yu-Seon Jeong (18'~20')**



CERN-Korea TH Institutes

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Publication

12 papers
(8 by Fellows + 1 by visiting student + 3 ack. TH institutes)

Physics at the LHC and Beyond

16 July 2018 to 10 August 2018
CERN
Europe/Zurich timezone

Search...

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This 4-week long CERN-Korea TH Institute will concentrate on a different set of topics each week:

1. Standard Model and Higgs Physics
2. Beyond Standard Model constraints from SM and Higgs measurements
3. BSM searches at colliders
4. New directions in model building

Registration: Attendance will be limited to around 40 people per week. There is no registration fee. Applications to attend will be open until March 18, 2018

Organizers:

- Claude Duhr (CERN/Louvain)
- Gian Giudice (CERN)
- Andrey Katz (CERN/Geneva)
- Deog-Ki Hong (Pusan University)
- Seung J. Lee (Korea University)
- Michelangelo Mangano (CERN)
- Matthew McCullough (CERN)
- Hyun Min Lee (Chung-Ang University)
- Seongchan Park (Yonsei University)
- Michele Papucci (LBL)
- Peter Richardson (CERN/Durham)
- Joshua Ruderman (NYU)
- Gavin Salam (CERN)
- Minho Son (KAIST)
- Andrea Wulzer (CERN/EPFL)
- Giulia Zanderighi (CERN/Oxford)
- Kathryn Zurek (LBL)

Starts 16 Jul 2018, 08:00
Ends 10 Aug 2018, 16:45

CERN

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No	Title	Authors	Date	Journal/arXiv
1	Fragmentation uncertainties in hadronic observables for top-quark mass measurements	G. Corcella, R. Franceschini, D. Kim	04/18	Nucl. Phys. B929, 485 arXiv:1712.05801 [hep-ph]
2	Inelastic Boosted Dark Matter at Direct Detection Experiments	G. F. Giudice, D. Kim, J.-C. Park, S. Shin	05/18	Phys. Lett. B780, 543 arXiv:1712.07126 [hep-ph]
3	How to prove that a ET excess at the LHC is not due to dark matter	D. Kim, K. T. Matchev	09/18	Phys. Rev. D98, 055018 arXiv:1712.07620 [hep-ph]
4	Boosted dark matter quarrying at surface neutrino detectors	D. Kim, K. Kong, J.-C. Park, S. Shin	08/18	JHEP08 (2018), 155 arXiv:1804.07302 [hep-ph]
5	Enhancing the discovery prospects for SUSY-like decays with a novel kinematic variable	D. Debnath, J. S. Gainer, C. Kilic, D. Kim, K. T. Matchev, Y.-P. Yang	09/18	Submitted to JHEP arXiv:1809.04517 [hep-ph]
6	Detecting a Boosted Diboson Resonance	K. Agashe, J. H. Collins, P. Du, S. Hong, D. Kim, R. K. Mishra	09/18	Submitted to JHEP arXiv:1809.07334 [hep-ph]
7	6d SCFTs and U(1) Flavour Symmetries	S.-J. Lee, D. Regalado, T. Weigand	03/18	Submitted to JHEP arXiv:1803.07998 [hep-th]
8	Tensionless Strings and the Weak Gravity Conjecture	S.-J. Lee, W. Lerche, T. Weigand	08/18	Submitted to JHEP arXiv:1808.05958 [hep-th]
9	Transverse momentum broadening and collinear radiation at NLO in the =4 SYM plasma	J. Ghiglieri, HyungJoo Kim	09/18	arXiv:1809.01349 [hep-ph]

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No	Title	Authors	Date	Journal/arXiv
10	Weyl symmetry and its spontaneous breaking in Standard Model and inflation	D. M. Ghilencea, H. M. Lee	09/18	arXiv:1809.09174 [hep-th]
11	A model of light dark matter and dark radiation	Deog Ki Hong	08/18	arXiv:1808.10149 [hep-ph]
12	The dS swampland conjecture with the electroweak symmetry and QCD chiral symmetry breaking	K. Choi, D. Chway, C. S. SHin	09/18	Phys. Rev. D98, 055018 arXiv:1809.01475 [hep-th]

Activities (May 2018~Oct 2018)

❖ 2 graduate students selected
- Se-jin Kim (Pheno/String): host by G. Giudice
- Yein Lee (GR) : host yet to find
- Will start at CERN before end of Feb 2019

❖ Selection of CERN fellow 2019
- Application deadline: 18 Oct 2018
- 6 applicants
- A Shortlist will be made on 13 Nov 2018
- Selection should be complete by Jan 2018

Plan (Nov 2018~Aug 2019: 10 months)

❖ CERN-CKC TH Institute 2019

- Scale invariance in particle physics and cosmology (28 Jan ~1 Feb 8)
- Mathematical physics of open-closed topological strings (8 Jul~ 12 Jul)
- Axions in the Lab and in the Cosmos (15 Jul ~ 19 Jul)

Scale invariance in particle physics and cosmology

28 January 2019 to 1 February 2019
CERN
Europe/Zurich timezone

Search...

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Short description

Theories with (classical or quantum) scale-invariance provide a dynamical origin of all mass scales and present a number of interesting aspects: they are an appealing framework to address the hierarchy problem and lead to naturally flat inflationary potentials and dark matter candidates. The aim of the meeting is to discuss scale invariance in particle physics and cosmology.

This theory institute is supported by the CERN-Korea collaboration program and the ERC grants NEO-NAT and NuBSM.

Organizers: A. Eichhorn, H. M. Lee, S. C. Park, J. Rubio, A. Salvio, S. Sibiryakov, M. Shaposhnikov, A. Strumia, C. Wetterich

Partial list of speakers:

- Fedor Bezrukov
- John Donoghue
- Astrid Eichhorn
- Dumitru Ghilencea
- Jinn-Ouk Gong

Future Plan

❖ Continue monitoring CERN-CKC fellow and grad-student programs with the aim of ensuring their impact on Korean science in the future, and optimizing this impact if possible.

❖ Organize 1 CERN-CKC TH Institute in Korea every 3 years
- Next one being planned in 2020 on BSM physics

❖ Proposing to host AdS/CFT annual conference at CERN in 2020 and financially support from CKC fund

❖ Promote active collaborations with Korean experimental groups (KCMS and KoALICE) and active participations of other Korean particle theorists in TH institutes

Conclusion

- The CERN-Korea theory collaboration program have provided/ will provide Korean young researchers with great opportunities for accelerating their careers.

- We keep promoting close collaborations between Korean participating members (and other Korean particle physics theorists) with CERN staffs for world-class HEP researches.