

Introduction to CAU HEP Center

THEP

Hyun Min Lee
Chung-Ang University



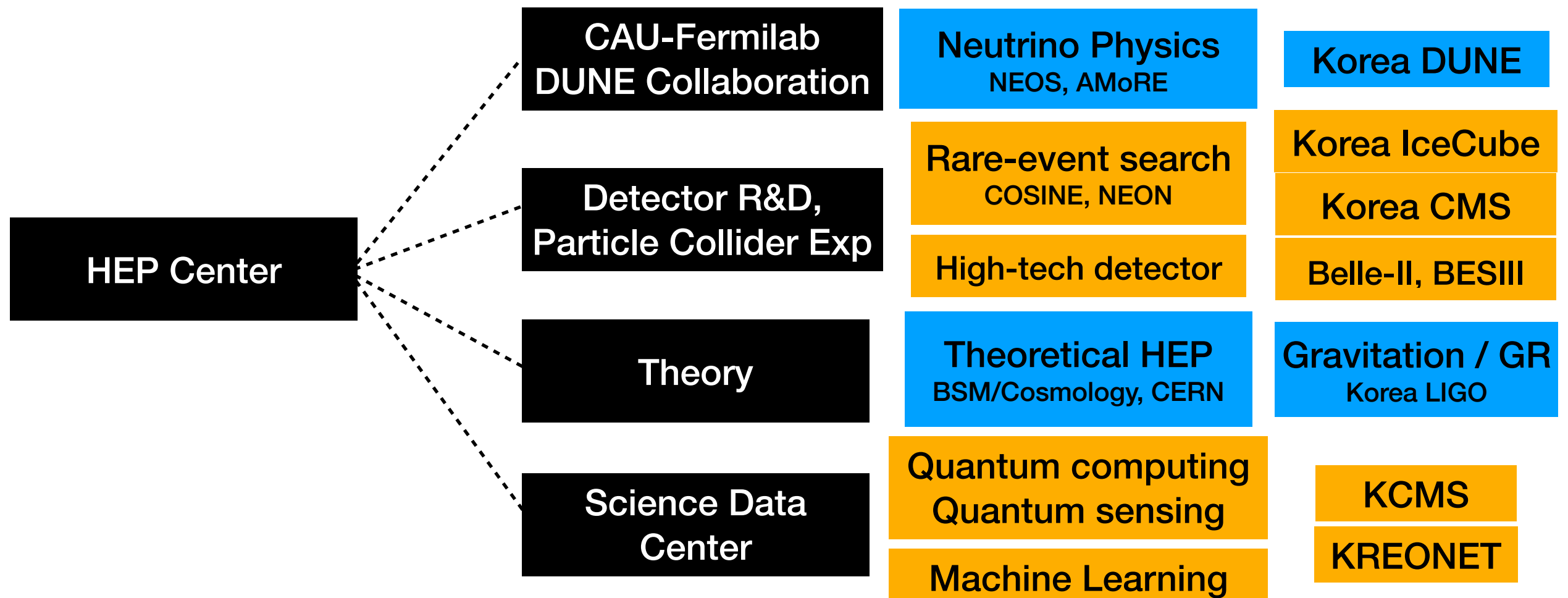
K-neutrino Symposium 2025
CAU, June 25, 2025

CAU High Energy Physics Center 고에너지물리연구센터

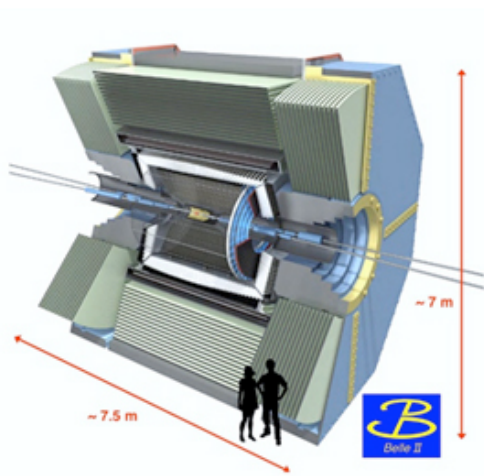
- Collaboration between Particle Physics, Astrophysics, Cosmology, and Neighboring fields (Computational Sciences, Mathematics).
- Build up research groups in the frontiers of Particle Physics and Astrophysics.
- Focus on Intensity beam experiments and Cosmology frontiers.
- Hub for International collaboration between young researchers.
- Promote collaboration between subfields and theory-experiment cooperation.
- Established in 2020. Funded for 2022-2025 as CAU-representative candidate center.

Organization

- Project-based, grant-based.
- Set lab-based goals for research.
- Aim at specialization in astroparticle physics.
- Structure of center and labs.



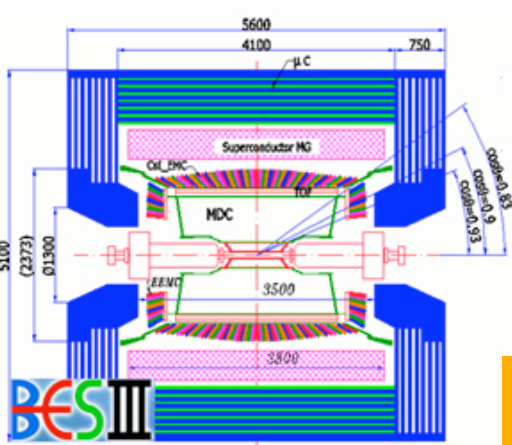
Research centers



Belle-II



CERN TH

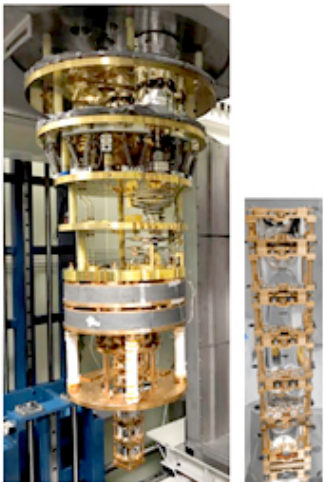


BESIII



(Credit: LIGO Lab/Caltech/MIT)

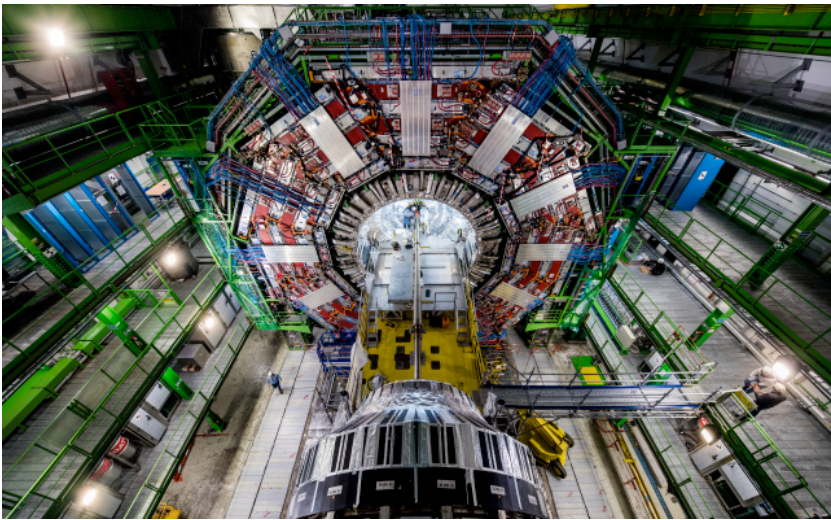
LIGO



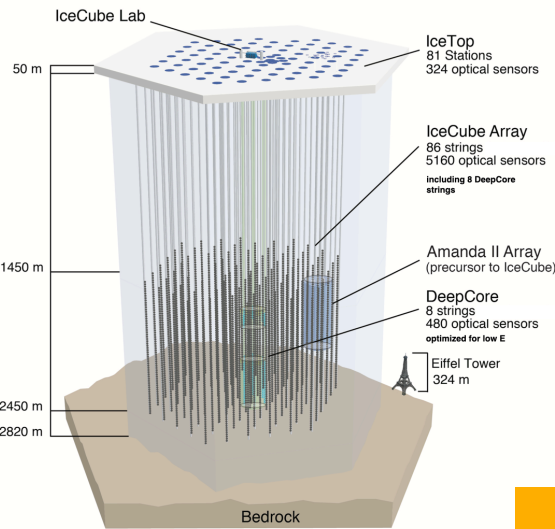
AMoRE



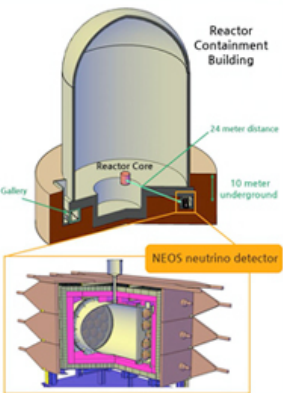
COSINE



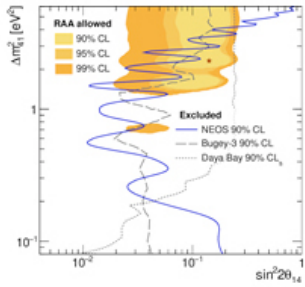
CMS



IceCube



NEOS, NEON



HEP members

- Center Professors



Hyun Min Lee

Director, THEP

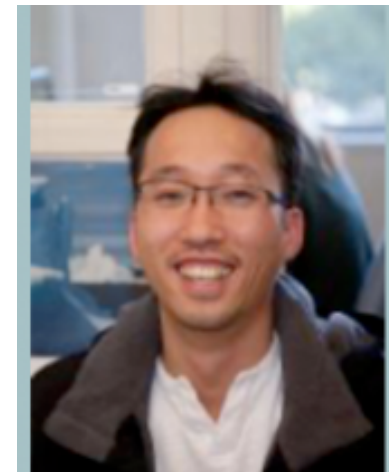
CERN-CKC TH



Kim Siyeon

NuLa

Korea DUNE



Chang Hyon Ha

RESL

Korea IceCube



Gungwon Kang

Korea LIGO

AXIS



Sookyung Choi

Belle-II, BESIII

CbHEP



Kyeongpil Lee

LHC

KCMS

HEP members

- Research professors and postdocs



Sarif Khan
(THEP, Brain Pool)

DM, neutrino models



Jongkuk Kim
(THEP, Sejong fellow)

DM, neutrino models



Yeong-Bok Bae
(AXIS)

GW



Young-Hwan Hyun
(AXIS)

GW



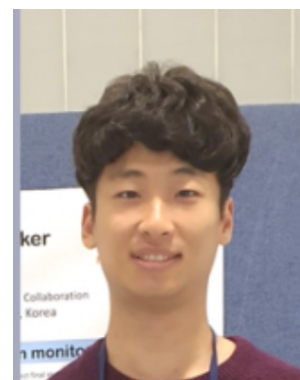
Mehedi Masud
(NuLa)

Neutrino oscillation



Night Fiza
(NuLa)

Neutrino oscillation



Sunwoo Kwon
(NuLa)

Neutrino exp



Rojalin Padhan
(THEP)

Collider theory



Arghyajit Datta
(THEP)

Leptogenesis

Advisory board



Eung Jin Chun
(KIAS)



Andrea de Gouvea
(Northwestern Univ)



Chang Kee Jung
(Stony Brook Univ)



Yeongduk Kim
(IBS-CUP)



Stephen Olsen
(IHEP)

HEP Center Workshops 2021~2024



Center activities

Open programs

- Leader's forum (2021-): consultation meeting with advisory committee or senior researchers
- CANU school on particle physics and astrophysics (2021-): summer school for senior undergraduates and graduates for three weeks.
- K-neutrino workshop (2022-)
- CAU Beyond the Standard Model workshop (2021-)
- K-Belle/Belle-II, K-DUNE, KGWG, K-IceCube, NR workshop, KCMS.

Internal events

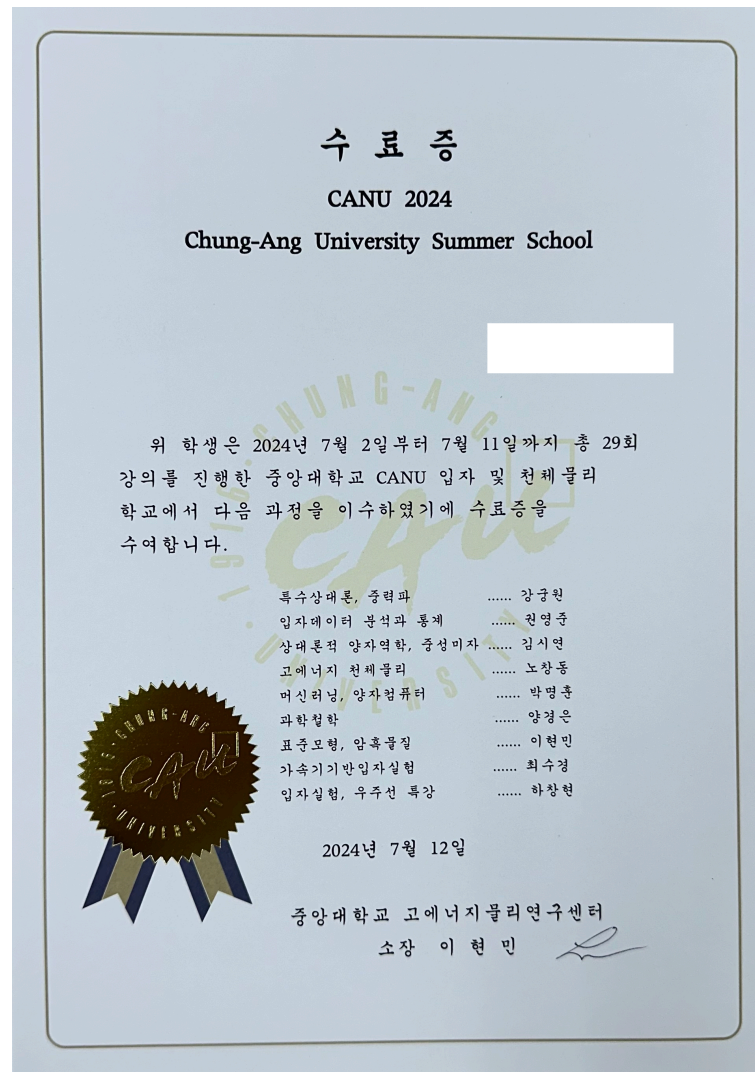
- HEP center workshop: in-house meeting between labs.
- HEP journal clubs: 6 speakers from labs per semester. (Organizer: Jongkuk Kim)
- HEP seminars: 4 speakers from other institutes per semester. (Organizer: Mehedi Masud)
- Department events: Poster day & Brain-Korea 21 workshop.
- Group seminars.

CANU 2025

- School on particle physics and astrophysics

Since 2021: Three weeks program for undergraduate/graduate students

Dates: 21-25 July 2025



<Topics in CANU 2025>

Gravitational Waves

Dark matter & neutrinos

Cosmic ray experiments

Special Relativity

Standard Model

Dark Matter

Collider experiments

Relativistic quantum mechanics

LHC experiments

Neutrino physics

String phenomenology

HEP Seminar/JC

- HEP Center Seminar 2024 Spring

- HEP Journal Club 2024 Spring

Organizer: Adriana Menkara

adrianamenkara@gmail.com

HEP Center Seminar

Venue: Rm. 108 at Bld. 102

Time: 17:00~18:00 Wednesday

Schedule:

April 17, Shiqi Yu (Utah University)

May 29, Sungwook Hong (KASI)

June 12, Jaehoon Yoo (University of Texas, Arlington)

Organizer: Gungwon Kang

gwkang@cau.ac.kr

HEP Center Journal Club Meeting

Venue: Rm. 108 at Bld. 102

Time: 17:00~18:00 Wednesday

Schedule:

March 13, Jaemin Seo (CAU)

March 27, Jongkuk Kim (CAU)

April 3, Rojalin Padhan (CAU)

May 8, Hani Kimku (CAU)

May 22, Yeong-Bok Bae (CAU)

June 5, Adriana Menkara (CAU)

Topics: IceCube status, Galaxy simulations, DAMSA experiment.

HEP Seminar/JC

- HEP Center Seminar 2024 Fall

- HEP Journal Club 2024 Fall

Organizer: Mehedi Masud

jomiye.adda@gmail.com

HEP Center Seminar

Venue: Rm. 109 at Bld. 102

Time: 17:00~18:00 Wednesday

Schedule:

Sept 11, Guang Yang (Brookhaven National Lab)

Oct 16, Liliana Kersten (Sogang Univ)

Nov 6, Donghui Jeong (PSU/KIAS)

Dec 11, Milind Diwan (BNL)

Organizer: Jongkuk Kim

jongkuk.kim927@gmail.com

HEP Center Journal Club Meeting

Venue: Rm. 109 at Bld. 102

Time: 17:00~18:00 Wednesday

Schedule:

Sept 25, Lucca Justino (CAU)

Oct 2, Amit Pathak (CAU)

Oct 30, Young-Hwan Hyun (CAU)

Nov 13, Juseong Park, Suhyon Kim (CAU)

Nov 20, Chang Hyon Ha (CAU)

Dec 4, Hyeonguk Son (CAU)

Topics: DUNE, Phase transitions, Large scale structure, LHC beam dump.

HEP Seminar/JC

- HEP Center Seminar 2025 Spring

- HEP Journal Club 2025 Spring

Organizer: Mehedi Masud

jomiye.adda@gmail.com

HEP Center Seminar

Venue: Rm. 110 at Bld. 102

Time: 16:00~18:00 Wednesday

Schedule:

March 7, Dr. Seong-Bae Yang (Korea Univ)

May 7, Prof. Seung J. Lee (KIAS)

May 14, Prof. Kyeongpil Lee (CAU)

June 11, Prof. Myeonghun Park (Seoultech)

Organizer: Jongkuk Kim

jongkuk.kim927@gmail.com

HEP Center Journal Club Meeting

Venue: Rm. 110 at Bld. 102

Time: 16:00~18:00 Wednesday

Schedule:

March 12, Arghyajit Datta (CAU)

March 26, Chang Hyon Ha (CAU)

April 2, Jongkuk Kim (CAU)

April 9, Eunji Jang (CAU)

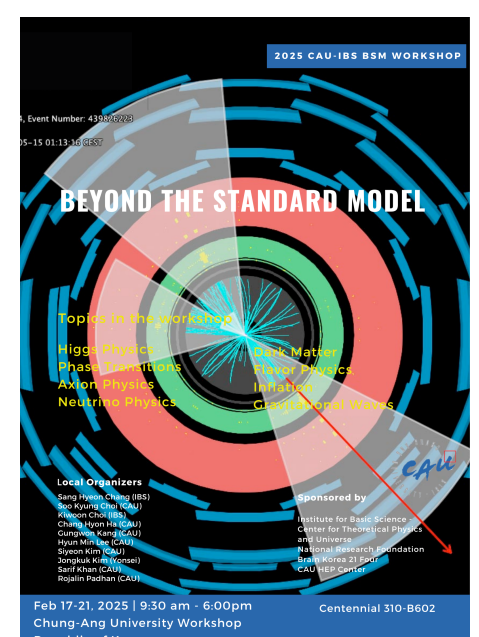
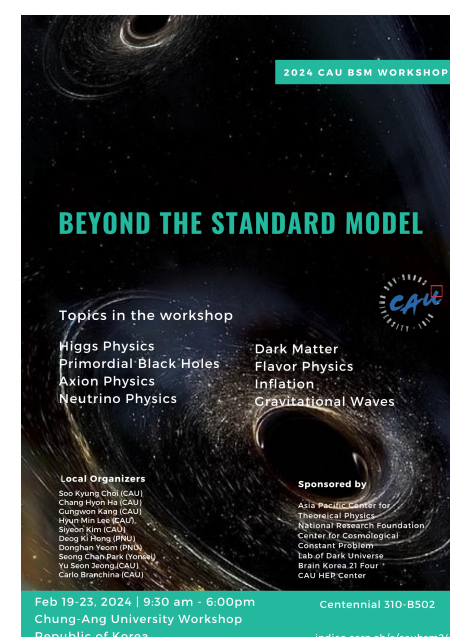
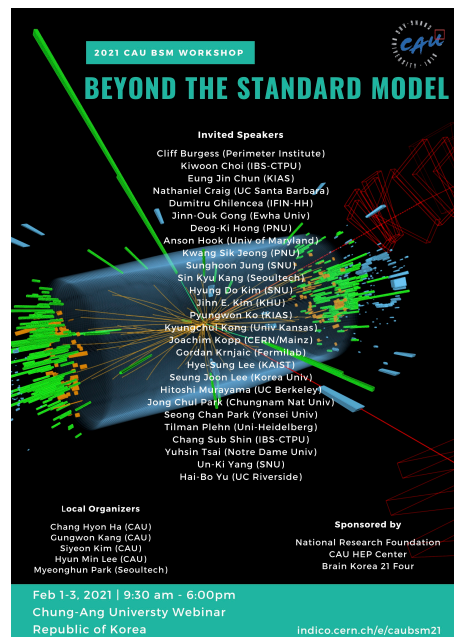
April 16, Hokyeong Nam (CAU)

May 21, Emar Masaku (CAU)

June 4, Seongsik Kim (CAU)

Topics: J-PARC, Cosmological Collider, CMS, Quantum computing

Beyond the Standard Model



Topics: Higgs, Axion, Neutrino, Dark Matter, Flavor, Inflation, Gravitational Waves

CAU BSM Workshop Series: 2021~2025

1st & 2nd online in 2021, 2022: 90, 156 participants

3rd hybrid in 2023: 128 participants

4th & 5th in-person in 2024, 2025: 94, 80 participants

2025 CAU BSM Workshop

2025 CAU-IBS BSM WORKSHOP

Event Number: 439826223

05-15 01:13:16 GEST

BEYOND THE STANDARD MODEL

Topics in the workshop

- Higgs Physics
- Phase Transitions
- Axion Physics
- Neutrino Physics
- Dark Matter
- Flavor Physics
- Inflation
- Gravitational Waves

Local Organizers

- Sang Hyeon Chang (IBS)
- Soo Kyung Choi (CAU)
- Kiwoon Choi (IBS)
- Chang Hyeon Ha (CAU)
- Gungwon Kang (CAU)
- Hyun Min Lee (CAU)
- Siyeon Kim (CAU)
- Jongkuk Kim (Yonsei)
- Sarif Khan (CAU)
- Rojalin Padhan (CAU)

Sponsored by

- Institute for Basic Science - Center for Theoretical Physics and Universe
- National Research Foundation
- Brain Korea 21 Four
- CAU HEP Center

Feb 17-21, 2025 | 9:30 am - 6:00pm
Chung-Ang University Workshop
Republic of Korea

Centennial 310-B602
indico.cern.ch/e/caubsm25

17-Feb 310-B602		18-Feb 310-B602		19-Feb 310-B602		20-Feb 310-B602		21-Feb 310-B602	
	chair		chair		chair		chair		chair
S1	Hyun Min Lee	S5	Sang Hui Im	S9	Seokhoon Yun	S13	Shuntaro Aoki	S17	Hyun Min Lee
9:30-10:30	Hai-bo Yu	9:30-10:30	Nathaniel Craig	9:30-10:30	Josef Pradler	9:30-10:30	Marcos Garcia	9:30-10:30	Masahide Yamaguchi
10:30-11:00	Break	10:30-11:00	Break	10:30-11:00	Break	10:30-11:00	Break	10:30-11:00	Break
S2	Jongkuk Kim	S6	Deog Ki Hong	S10	Chang-Seong Moon	S14	Gungwon Kang	S18	Yong Tang
11:00-11:40	Alejandro Ibarra	11:00-11:40	Sungwoo Hong	11:00-11:40	Tevong You	11:00-11:40	Yong Tang	11:00-11:40	Seong Chan Park
11:40-12:20	Jong-Chul Park	11:40-12:10	Junichiro Kawamura	11:40-12:10	Myeonghun Park	11:40-12:20	Jinn-Ouk Gong	11:40-12:10	Shuntaro Aoki
12:20-14:00	Lunch	12:10-14:00	Lunch	12:10-14:00	Lunch	12:20-14:00	Lunch	12:10-14:00	Lunch
S3	Chang Hyeon Ha	S7	Sungwoo Hong	S11	Chang Sub Shin	S15	Hai-bo Yu	S19	Tae Hyun Jung
14:00-14:40	Yeongduk Kim	14:00-14:40	SungWoo Youn	14:00-14:30	Tae Hyun Jung	14:00-14:40	Chang Sub Shin	14:00-14:40	Pyungwon Ko
14:40-15:20	Ke Han	14:30-15:10	Deog Ki Hong	14:30-15:00	Joern Kersten	14:40-15:00	Minxi He	14:40-15:00	Yechan Kim
		15:10-15:40	Sang Hui Im	15:00-15:30	Carlo Branchina	15:00-15:30	Seokhoon Yun	15:00-15:20	Jaeyoung Park
15:20-15:50	Break	15:40-16:10	Break	15:30-16:00	Break	15:30-16:00	Break	15:20-15:50	Break
S4	Siyeon Kim	S8	Sarif Khan	S12	Sookyung Choi	S16	Marcos Garcia	S20	Rojalin Padhan
15:50-16:30	Eung Jin Chun	16:10-16:50	Chang-Seong Moon	16:00-16:40	Youngjoon Kwon	16:00-16:40	Yann Mambrini	15:50-16:20	Sarif Khan
16:30-17:00	Seodong Shin	16:50-17:20	Stefano Scopel	16:40-17:00	Pouya Bakhti	16:40-17:00	Satyabrata Mahapatra	16:20-16:40	Lucca Justino
17:00-17:20	Kensuke Akita	17:20-17:40	Rojalin Padhan	17:00-17:20	Tatsuya Banno	17:00-17:20	Arghyajit Datta	16:40-17:00	Hochel Lee
17:20-17:40	Sambo Sarkar					17:20-17:40	Jong-Hyun Yoon		
				17:20-18:30	Discussion				
				18:30-20:30	Banquet				

