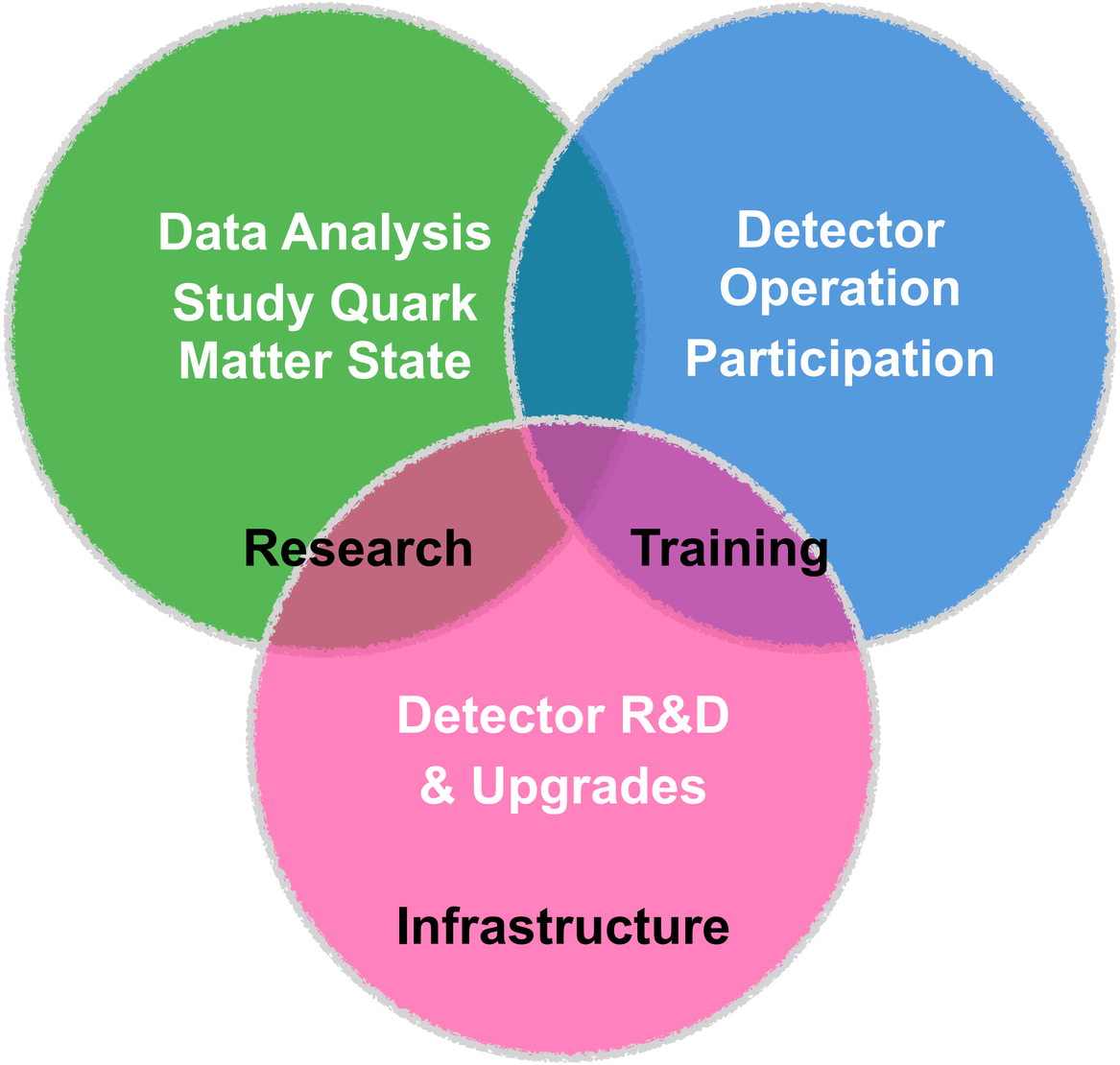
KoALICE 2024-4

CKC meeting

MinJung Kweon
Inha University

2024. 10. 28

What to achieve



KoALICE team is focusing on

- ✦ Run 2 data analysis
- ✦ Run 3 data analysis
- ✦ ITS2 operation
- ✦ ITS3 R&D
- ✦ ALICE 3 R&D

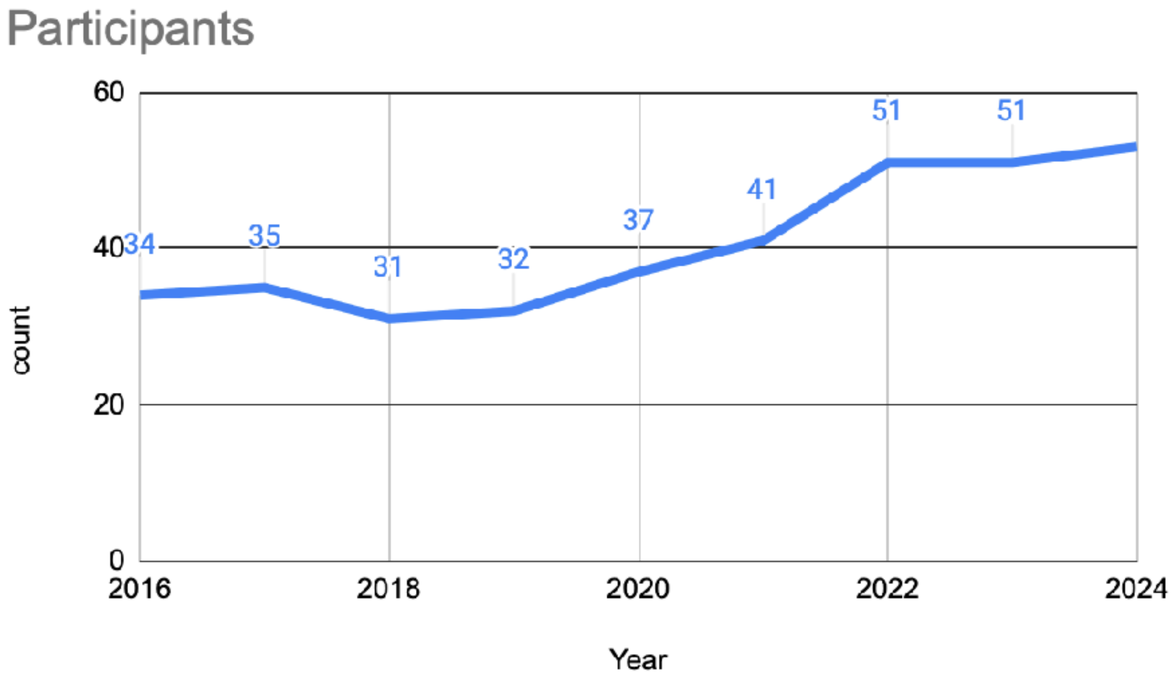
Member Institutes

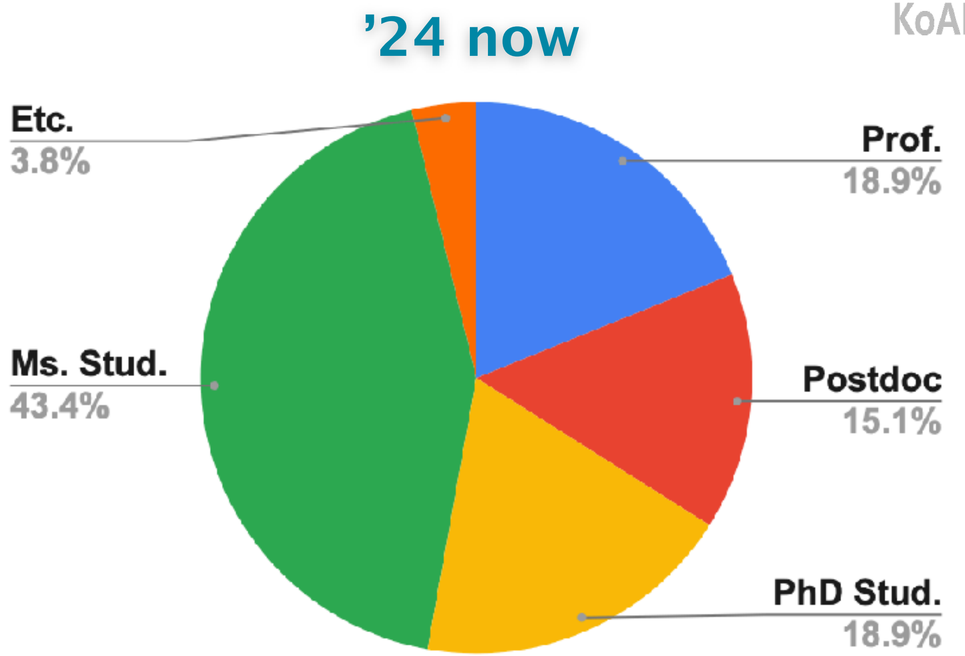
7 (8*→7) Universities + 1 Institute

- Chungbuk National University
- Inha University
- Jeonbuk National University
- Yonsei University
- Pusan National University
- Sejong University
- Sungkyunkwan University
- KISTI (GSDC)

*Gangneung-Wonju NU → no faculty member

Members





	Institute					
		Prof.	Pos doc	Grad. Stud.	Etc	Total
2019	6→7	7→8	7	16	1	32
2020	7	8	7	21	1	37
2021	7→8	8→9	7	24	1	41
2022	8	10	9	31	1	51
2023	8	10	10	30	1	51
2024	8→7	10	8	33	2	53

KoALICE in numbers (53+1)

- 18 PhD Physicists (18 M&O-A)
- 10 PhD Students
- 23 Master Students
- 1 researcher (post-MS degree)
- 1 Administrative Assistant
- +1 PhD Physicists from KISTI (1 M&O-A)

Main changes in members over the past year

KoALICE

Changes

- **JunLee Kim (JBNU)**: posdoc at JBNU ⇨ CERN fellow, 2024.4
- **Chong Kim (PNU)**: posdoc at PNU ⇨ same institute but move to EIC project
- **Jeongsu Bok (PNU)**: posdoc at PNU ⇨ same institute but move to EIC project

New posdoc

- **Krista Smith:** pos doc at Los Alamos ⇨ postdoc at PNU, 2024.8 (Heavy flavour data analysis)
- **Meike Charlotte Danisch**: pos doc at Heidelberg U. ⇨ postdoc at PNU, 2024.9 (Deputy Run Coordinator, ITS3 or ALICE 3 from next year)
- **Naseem Bouchhar**: postdoc at Sejong U., 2024.10 (ITS3)

6 Master degrees.

- **SW Park (GWNU)**: proceeds to Ph. D program at SKKU Graduate School of Physics, 2024.2.
- **YJ Kim (PNU)**: 2024.2.
- **JS Yoon** (**Inha**): samsung, 2024.8.
- **GY Kim** (**Inha**): post-MS researcher at Korea University, 2024.8.
- **HG Hang** (**Inha**): proceeds to Ph. D program at GW Graduate School of Physics (computer engineering), 2024.8.
- **HJ Lim** (**PNU**): proceeds to Ph. D program at PNU Graduate School of Physics, 2024.8.

Status of CERN visit in 2024

Stay	total	PhD	Grad. Stud.	Name
XLong (> 5 mo)	8	7	1	Vit Kucera(HF O^2, HF data analysis), YW Baek(Muon run coordinator), Anton Alkin(O2 development), JS Kim(PhD), JY Cho(PhD stud., HF data analysis), IK Yoo(Prof., LF analysis), JY Kim(ITS2 SRC, ITS3 R&D), M Danisch(DRC)
Long (2~5 mo)	1		1	TJ Kim(PhD stud., HF data analysis)
Short (< 2 mo)	27	7	20	MJ Kweon etc.

◉ **Long stay**

- **YW Baek** : PhD, global polarization, multiplicity & MID upgrade, MUON subsystem run coordinator
- **Vit Kucera** : PhD, since ’22.03, Run3 O^2 framework development, Run3 HF data analysis, Supervising students
- **Anton Alkin**: PhD, since ’23.01, O^2 framework development, data analysis
- **JS Kim**: PhD, TOF expert On-call & detector test
- **JY Cho**: PhD student, until ’25.08, HF data analysis
- **JY Kim**: ITS2 subsystem run coordinator, ITS3 R&D
- **M Danisch**: Deupty run coordinator

◉ **Stay 2~5 months**

- **TJ Kim**: HF data analysis

◉ **Short stay (<2 months)**

- Run3 OFFLINE shift and Run3 & Run2 data analysis, ITS3 R&D

Scientific Achievements over the past year

KoALICE

A total of 6 physics papers with KoALICE members as main authors over the past one year (Nov.2023~)

Published in 2023

1. Production of pions, kaons, and protons as a function of the relative transverse activity classifier in pp collisions at $\sqrt{s}$=13 TeV, JOURNAL OF HIGH ENERGY PHYSICS, **Adrian Nassirpour**, 6 June 2023
2. Light (anti)nuclei production in Pb-Pb collisions at $\sqrt{s_{NN}}$=5.02 TeV, PHYSICAL REVIEW C, **Bong-hwi Lim**, 8 June 2023
3. Measurement of electrons from beauty-hadron decays in pp and Pb-Pb collisions at $\sqrt{s_{NN}}$=5.02 TeV, PHYSICAL REVIEW C, **Jonghan Park**, 15 September 2023
4. Pseudorapidity densities of charged particles with transverse momentum thresholds in pp collisions at $\sqrt{s}$ = 5.02 and 13 TeV, PHYSICAL REVIEW D, **Jeongsu Bok, Beomkyu Kim**, 11 October 2023
5. Groomed substructure of D^0-jets in pp at $\sqrt{s}$ = 13 TeV, PHYSICAL REVIEW LETTERS, **Vit Kucera**, 7 November 2023

Published in 2024

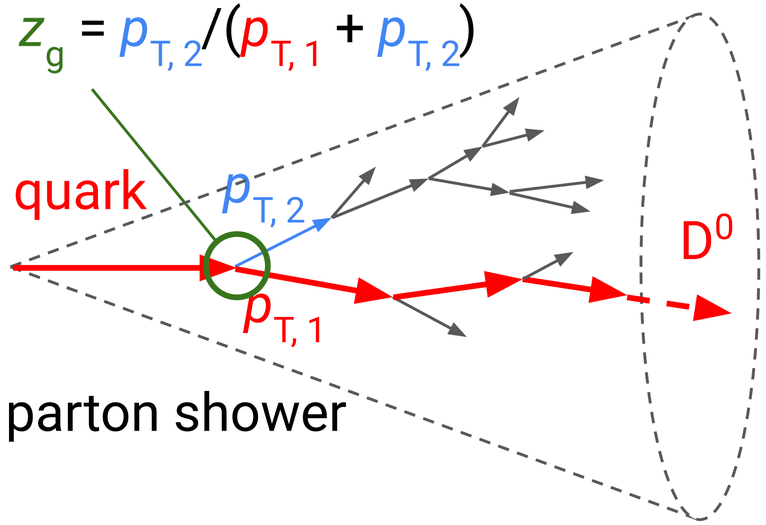
1. Multiplicity and event-scale dependent flow and jet fragmentation in pp collisions at $\sqrt{s}$=13 TeV and in p-Pb collisions at $\sqrt{s_{NN}}$=5.02 TeV, JOURNAL OF HIGH ENERGY PHYSICS, **Junlee Kim, Beomkyu Kim**, 15 March 2024
2. Measurement of the fraction of jet longitudinal momentum carried by Λ_c^+ baryons in pp collisions, PHYSICAL REVIEW D, **Vit Kucera**, 5 April 2024
3. Observation of abnormal suppression of $f_0(980)$ production in p−Pb collisions at $\sqrt{s_{NN}}$=5.02 TeV, PHYSICS LETTERS B, **Junlee Kim, Beomkyu Kim, Sanghoon Lim, Eun Joo Kim**,
4. Light-flavor particle production in high-multiplicity pp collisions at $\sqrt{s}$=13 TeV as a function of transverse spherocity, JOURNAL OF HIGH ENERGY PHYSICS, **Adrian Nassirpour**, 15 May 2024
5. Multiplicity-dependent production of Σ(1385) and Ξ(1530) in pp collisions at $\sqrt{s}$=13 TeV, JOURNAL OF HIGH ENERGY PHYSICS, **In-Kwon You, Bong-Hwi Lim**, 29 May 2024

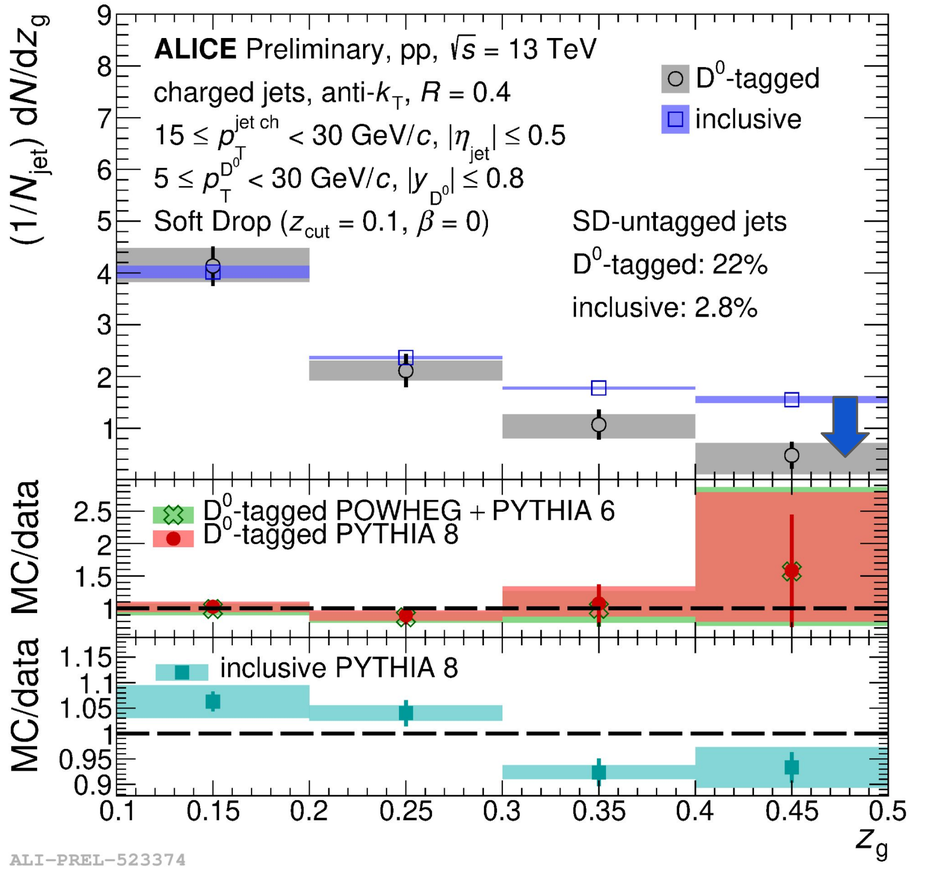
Paper Highlight: D^0-jets structure

Groomed substructure of D^0-jets in pp at $\sqrt{s}$ = 13 TeV,

Fragmentation via heavy-flavor jets: Heavy flavor conserved in the parton shower and experimentally traceable

→ access to properties of gluon emissions



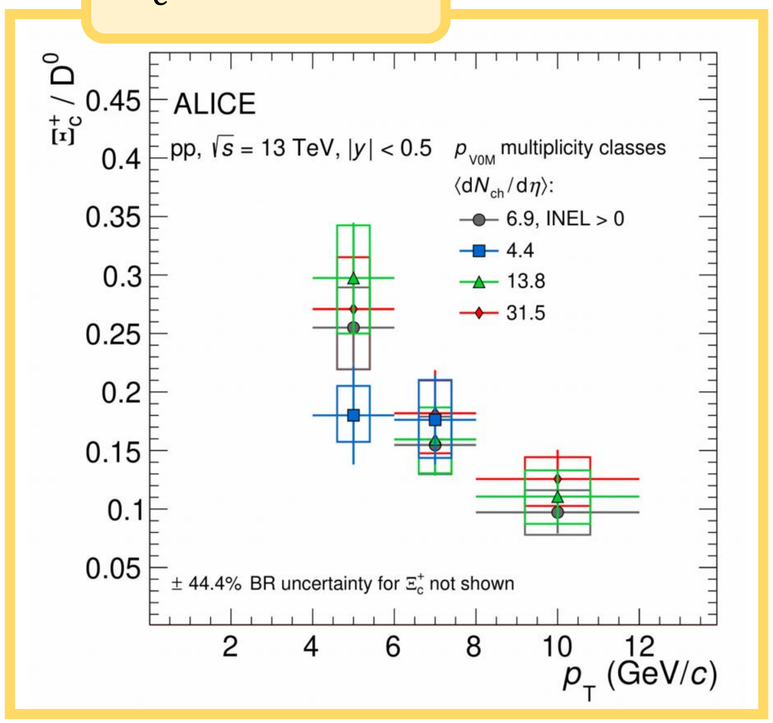


PHYSICAL REVIEW LETTERS, Vit Kucera, 7 November 2023

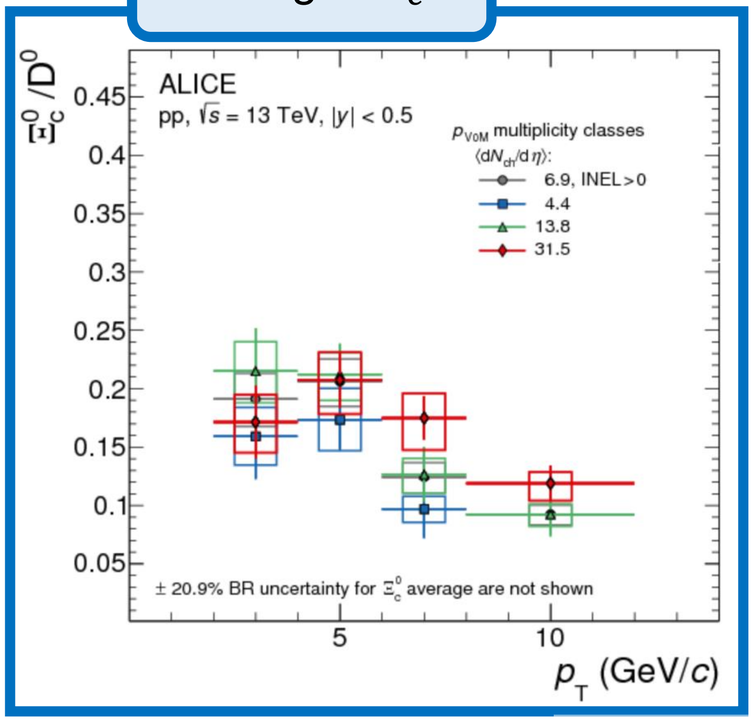
Data Analysis Highlight: Ξ_c^+ production in different multiplicity class

Baryon enhancement at the LHC with respect to e^+e^- collisions is caused by **different hadronisation mechanisms** at play in the parton-rich environment produced in pp collisions

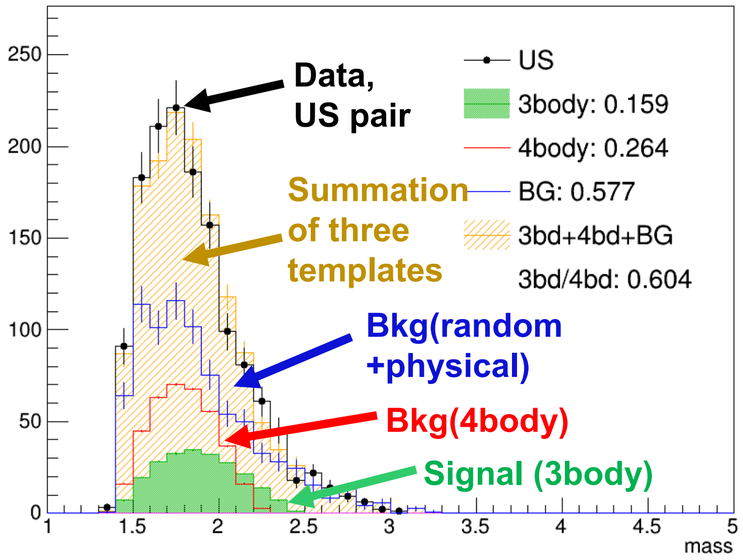
$\Xi_c^+ \longrightarrow \Xi^-\pi^+\pi^+$



Averaged Ξ_c^0



Example :
Multiplicity 0 < p_{V0M} < 100 class, p_T 4 to 6 GeV/*c* interval



Branching fraction
$= \mathrm{BR}(\Xi_c^0 \to e^+\Xi^-\nu_e)/\mathrm{BR}(\Xi_c^0 \to \Xi^-\pi^+)$

MB + HMV0: 0.8261 ± 0.0945 (stat) + 0.0969 - 0.0842 (syst)

Jaeyoon Cho + Chong Kim

First measurement of Ξ_c^+ production in different multiplicity class
The first paper draft was sent to IRC

Data Analysis Highlight: Ξ_c^+ production in different multiplicity class

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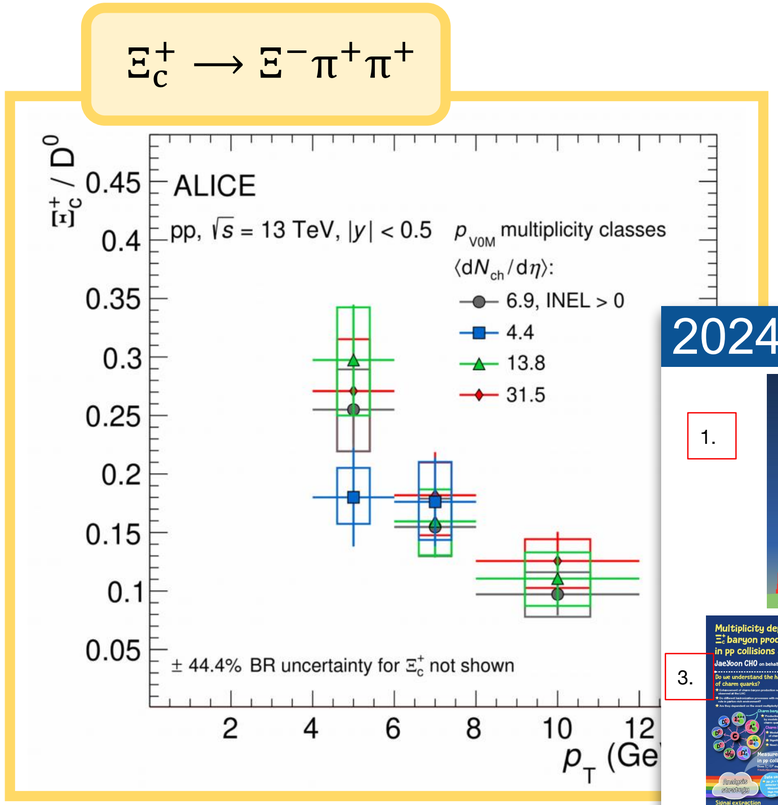
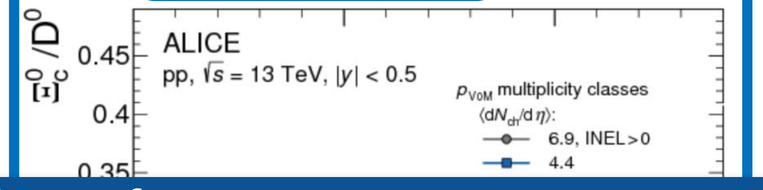


Averaged Ξ_c^0



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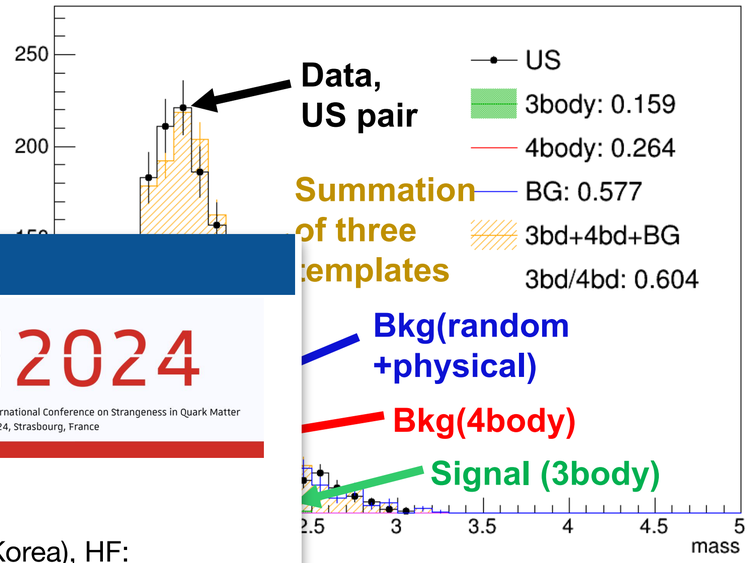
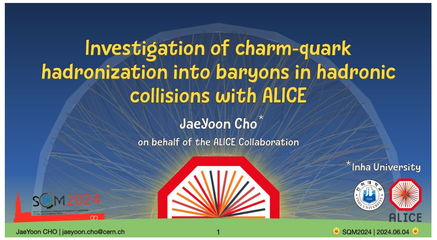


ction
$^+\Xi^-\nu_e)/\mathrm{BR}(\Xi_c^0 \to \Xi^-\pi^+)$
(stat) + 0.0969 - 0.0842 (syst)
tiplicity class

2024 big conferences

1.



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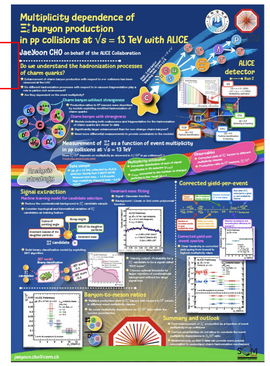
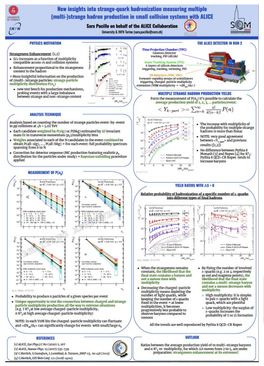




1. JaeYoon Cho (Inha Univ, Korea), HF:
   a. Andre Mischke award for best talk at SQM
2. Sarah Pucillo (Torino, Italy), LF:
   a. best poster award at SQM (flash talk)
3. JaeYoon Cho, HF:
   a. for the "highly appreciated poster"

2.

Congratulations!

ALICE Week 10 July 2024

12

Jaeyoon

Run 3 data analyses

KoALICE

Jaeyoon Cho (Inha): Measurement of Ξ^{+}_{c} baryon via hadronic decay channel in pp collisions at $\sqrt{s}$ = 13.6 TeV

Hyunwoo Kim (Inha): Measurement of Ξ^{+}_{c} baryon jet to understand charm fragmentation in pp collisions at $\sqrt{s}$ = 13.6 TeV

Vit Kucera (Inha): Measurement of Λ_c baryon jet to understand charm fragmentation in pp collisions at $\sqrt{s}$ = 13.6 TeV

Sangwoo Park (SKKU): $f_2(1270)$ production measurement in Pb-Pb collisions,

Yeonseul Bae (SKKU): $f_0(980)$ production measurement in pp and Pb-Pb collisions,

Junsuk Bae (SKKU): Jet transverse momentum in all three collision systems,

Hyungjun Lee (SKKU): b-jet production in pp collisions

Jaehyuk Ryu (PNU): Multiplicity dep. and R-dep. jet fragmentation observables in pp at 13.6 TeV

Sujung Ji (PNU): K_1 production in pp at 13.6 TeV, Charged K* polarization in PbPb at 5.36 TeV

Hyunji Lim (PNU): Multiplicity dep. ρ(770) production in pp at 13.6 TeV

Changhwan Choi (PNU): b-jet cross section with GNN in pp at 13.6 TeV

Minjae Kim (PNU): vdM scan analysis, Multiplicity dep. Ξ(1530) production in pp at 13.6 TeV

Jinhyun Park (PNU): Ξ^{+}_{c} cross section via hadronic decay channel in pp at 5.36 TeV

Krista Smith (PNU): Ξ^{0}_{c} cross section via hadronic decay channel in pp at 5.36 TeV, heavy-flavor electron flow in pp at 13.6 TeV

Adrian Nassirpour (Sejong): prompt photon in pp at 13.6 TeV

Jimun Lee/Adrian Nassirpour (Sejong): ϕ and K* in and out of jets in pp at 13.6 TeV

Heavy flavour baryons
Heavy flavour jets
Heavy flavour flow
Light flavours (f, K, ρ, ϕ, …)
Jets
Jet structures

Scientific Activities

KoALICE

◉ Paper Review & Analysis Review Committee

‣ Internal Paper Review Committee:

- The measurement of non-prompt D-meson elliptic flow in Pb-Pb collisions at 5.02 TeV (MJ Kweon)
- Measurement of the angle between jet axes in Pb−Pb collisions at $\sqrt{s_{NN}}$ = 5.02 TeV (Vit Kucera)
- Measurement of the angle between jet axes in pp collisions at $\sqrt{s}$ = 5.02 TeV (Vit Kucera)
- Investigation of $K^{+}K^{-}$ interactions via femtoscopy in Pb-Pb collisions at $\sqrt{s_{NN}}$=2.76 TeV at the LHC (JH Song)
- K^{*+-} production in Pb-Pb collisions at 5.02 TeV (JH Song)
- Pseudorapdity dependence of long-range correlations in Pb-Pb and Xe-Xe collisions (BK Kim)
- Particle production as a function of charged-particle flattenicity in pp collisions at $\sqrt{s}$=13 TeV (Adrian Fereydon Nassirpour)

‣ Analysis Review Committees : BK Kim, IK Yoo, Vit Kucera (two analyses), JY Cho (two analyses)

◉ Committee related to organization

- ALICE junior Korean Ambassador : SuJung Ji (since 2022)
- ALICE Conference Committee : MJ Kweon (since 2023)
- PAG-HF-JE Coordinator : Vit Kucera
- PAG-Resonance Coordinator : Adrian Fereydon Nassirpour
- MID subsystem run coordinator : YongWook Baek
- Deputy run coordinator : Meike Charlotte Danisch
- ITS2 subsystem deputy run coordinator : Jiyoung Kim

◉ Awards

- Korean Physical Society Meeting outstanding presentation awards: JaeHyuk Ryu, SuJung Ji
- SNP School outstanding presentation awards: SuJung Ji
- Andre Mischke award for best talk at SQM2024: Jaeyoon Cho

Scientific Activities

KoALICE

◉ Outstanding awards

- Junlee Kim **awarded the Bosan nuclear physics prize** in 2024. This prize is an award given to a young researcher who have conducted outstanding research in the filed of nuclear physics in the Korean Physical Society. He continues his career in this field as a **CERN fellow** starting from this April.
- Jaeyoon Cho: **Andre Mischke award for best talk at SQM2024** conference

김준이 박사

전북대학교를 졸업한 김준이 박사(2011학번)가 한국물리학회가 수여하는 2024년 봄 한국물리학회상 '보산핵물리학상' 수상자로 선정됐다.

한국물리학회 보산핵물리학상은 국내외 저명
나 우수한 학위논문을 집필하는 등 연구업적이
에 기여할 것으로 기대되는 젊은 핵물리학자에

김 박사는 스위스 제네바 유럽핵입자물리연구
충돌기(LHC, Large Hadron Collider)의 ALI
돌 데이터 분석을 통해 하전입자의 흐름과 가브
등을 활발히 수행해 왔다.

특히 f0(980) 입자의 내부구조 이해를 위한 실

오고 있다.

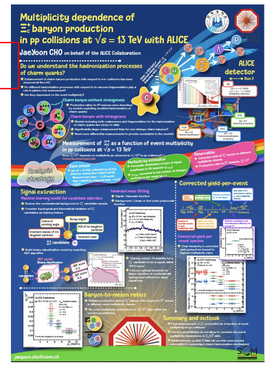
김 박사는 짧은 연구 경력에도 불구하고 International Nuclear Physics Confere
에서 우수한 연구성과를 발표했다.

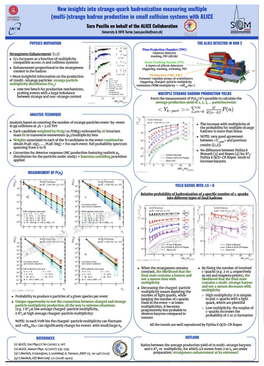
이와 함께 김 박사는 그동안의 연구 성과를 인정받아 지난해 12월 유럽핵입자물리연
fellowship' 수상자로 선정됐고, 이달 1일부터는 유럽핵입자물리연구소에서 펠로우
어가고 있다.

2024 big conferences

1.

3.





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Congratulations!

SQM2024
The 21st International Conference on Strangeness in Quark Matter
3-7 June 2024, Strasbourg, France

ALICE Week 10 July 2024

12

Participating detector operation

KoALICE

Korea ALICE team (will be clustered)
Due: 3 % (total M&O 19 including KISTI) of the total ALICE shifts

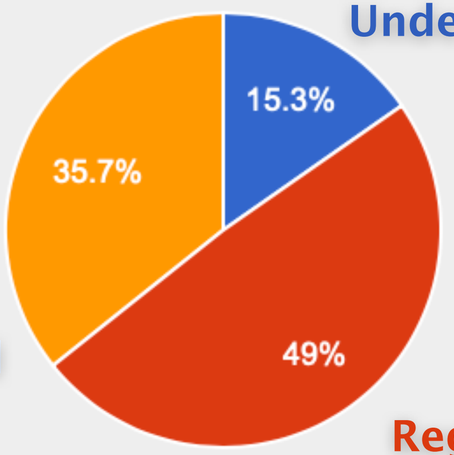
92% up to now

Institute/Cluster	Status	M&O	Due	Carryover	Done	%	Booked	%
KR - Cheongju	underbooked	1	9.57		4	42%	4	42%
KR - Daejeon	underbooked	1	9.57					
KR - Gangneung	overbooked	1	9.57		17.5	183%	17.5	183%
KR - Incheon	overbooked	4	38.26		37.5	98%	45.5	119%
KR - Jeonju	underbooked	2	19.13		12	63%	12	63%
KR - Pusan	regular	4	38.26		30	78%	30	78%
KR - Seoul Sejong	regular	3	28.7		18.6	65%	24.6	86%
KR - Seoul Yonsei	underbooked	1	9.57		6	63%	6	63%
KR - Suwon City	overbooked	2	19.13		21	110%	26	136%

ALICE total

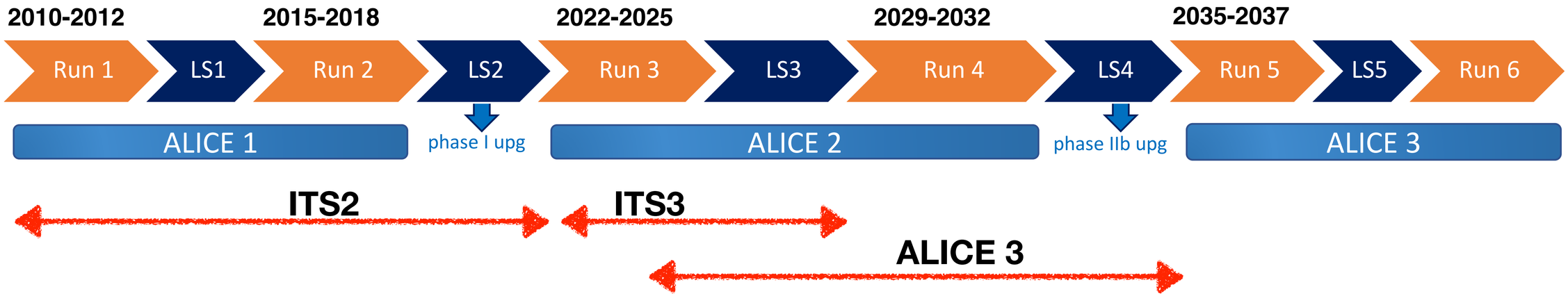
Total credits	6102.7
Total M&O	638
Lambda	9.57
Carryover	0

Institutions Status



Participation in silicon detector upgrade

- **KoALICE has been heavily involved in developing state-of-the-art silicon detector since 2013**

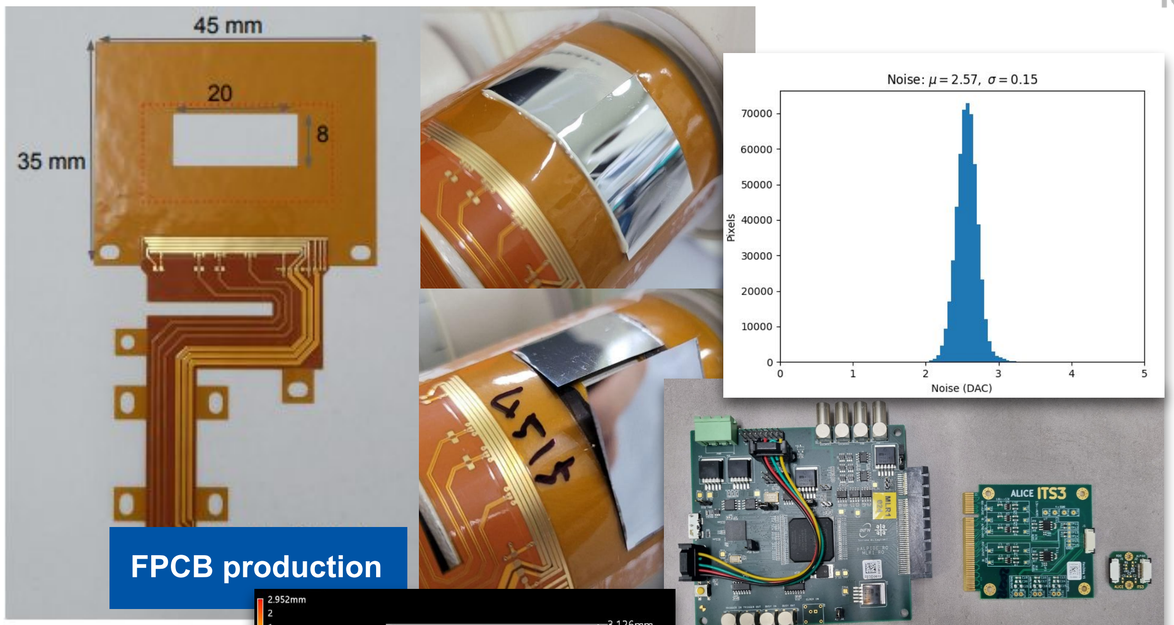


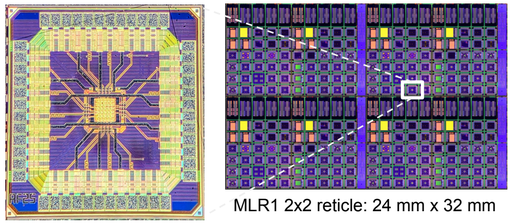
ITS3 R&D contribution

KoALICE

- **KoALICE contribution to ITS3**
  - Sensor design and fabrications (Yonsei)
  - Sensor characterization (Inha, PNU)
  - Studies on interconnect technology (Inha, MEMSPACK)
  - Electronics board productions for test system (PNU, Inha, NOTICE, MEMSPACK)

Develop bent ALPIDE chip test system & perform tests

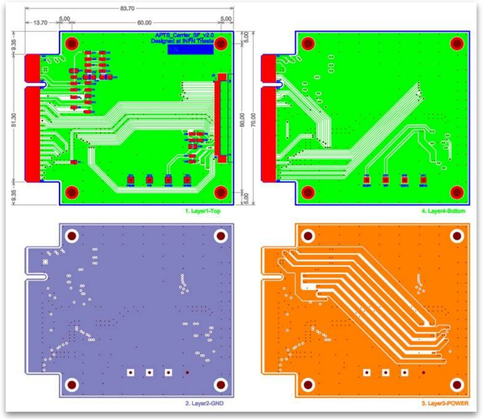


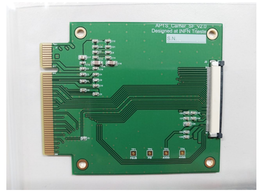

APTS-SF sensor:
1.5 mm x 1.5 mm

MLR1 2x2 reticle: 24 mm x 32 mm

FPCB for APTS-SF production

APTS-SF Carrier board design modification





FPCB for APTS-SF design and production

APTS-SF Carrier board modification

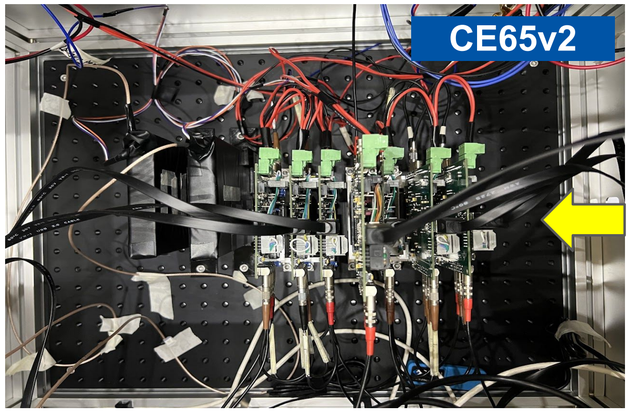
Probecard production for MOSS

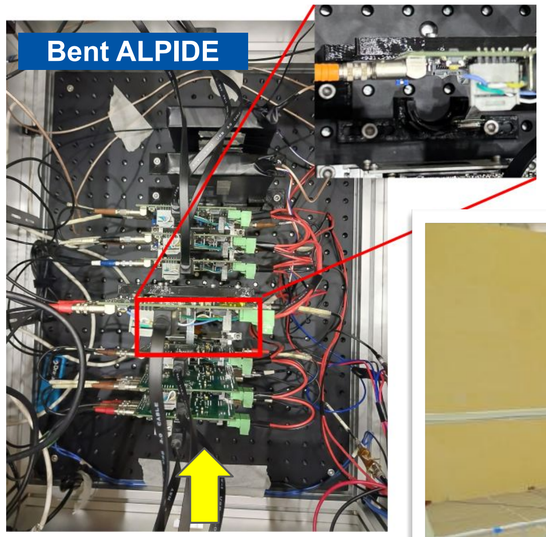
ITS3 R&D contribution

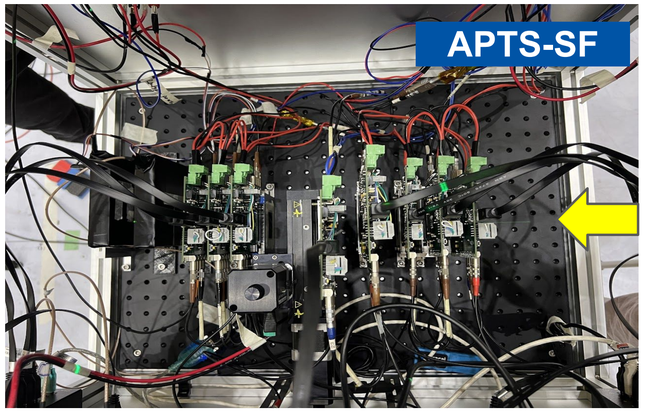
KoALICE

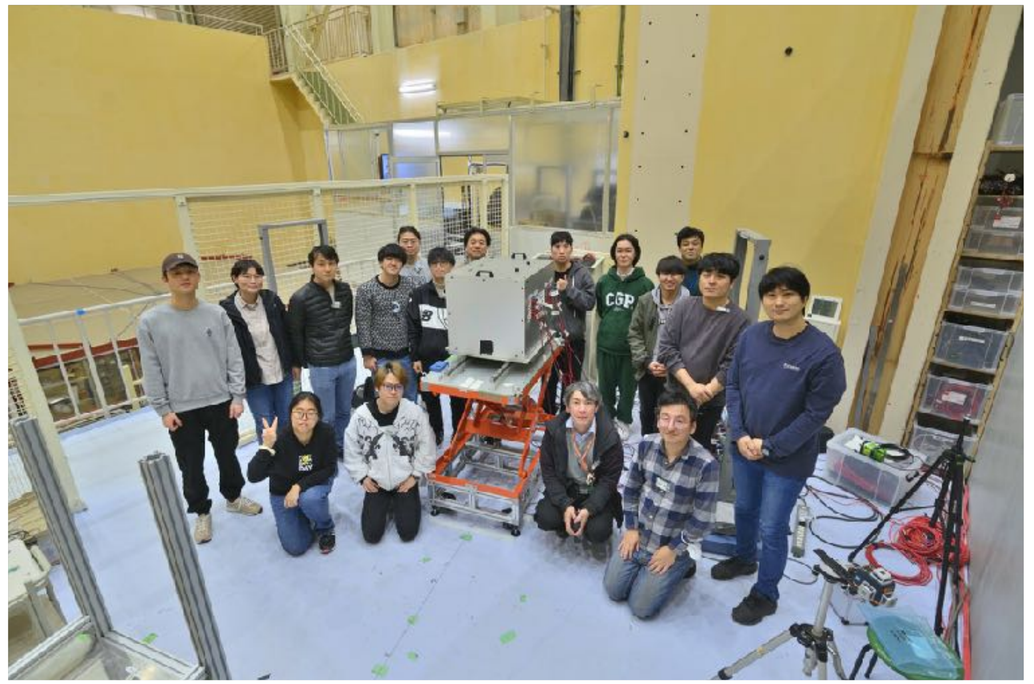
◉ **Producing Korean ALICE TeleScope (KATS) production and its operation**

- Telescope: Detector system for tracking performance with multiple sensor layers
- **The 1st ITS3 telescope production in ITS3 asian institutions**
- **ITS3 beam test with Korean telescope at PF-AR beam line in KEK**: Various sensors have been studied (Bent ALPIDE, APTS-SF, CE65v2)







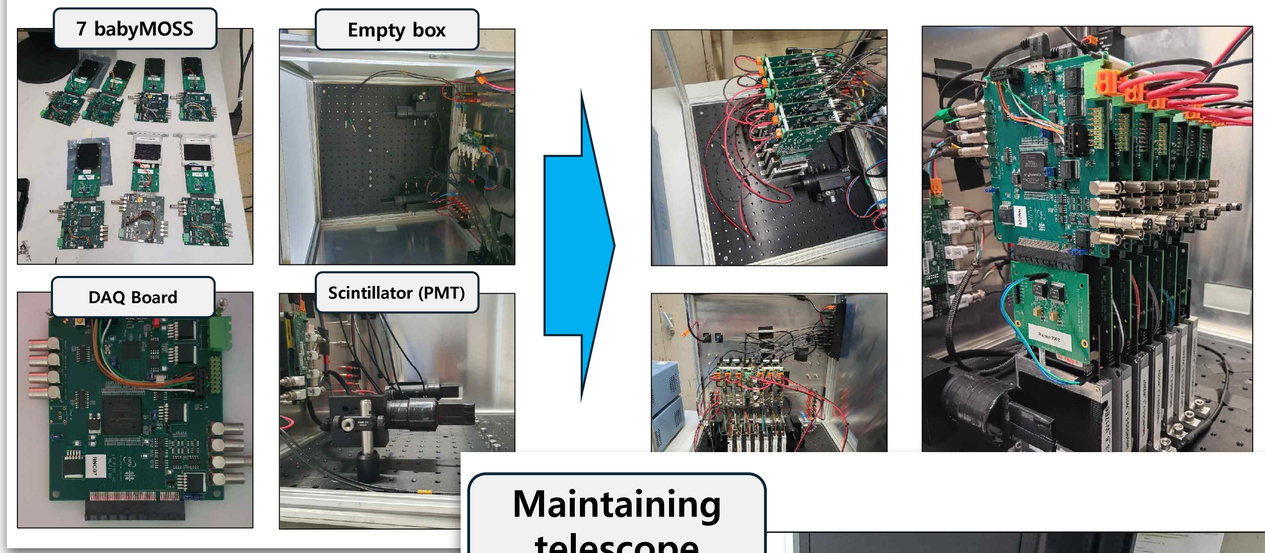


ITS3 R&D contribution

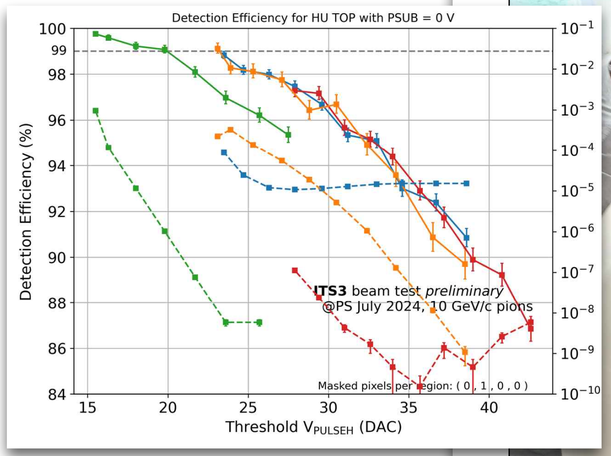
KoALICE

◉ **Participate several CERN beam tests (babyMOSS telescope)**

Assemble the babyMOSS-telescope



Maintaining telescope



ITS3 C&I MoU

KoALICE

- **MoU Execution for ITS3 R&D (2023-2024): Korea contributes 250 kCHF until the end of this year**
- **ITS3 C&I MoU: total 200 kCHF for two years (2025-2026)**

	Period	Total	KoALICE contribution
R&D	’23 ~ ’24	~3,030 kCHF	250 kCHF (~ 8.3 %)
Construction	’25 ~ ’28	~2,500 kCHF	200 kCHF

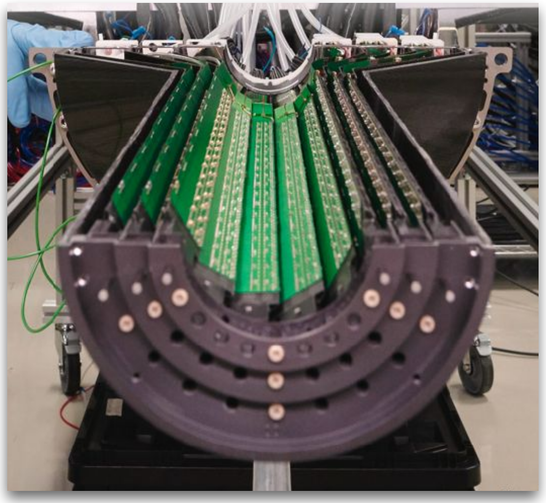
MoU title	Contents	Contributions
Memorandum of Understanding for collaboration in the construction of the ALICE detector ITS3 upgrade of the ALICE Inner Tracking System	KoALICE engage to contribute to the ITS3 C&I with different items as below:	
	· A partial contribution to the processing costs of CMOS sensors	100 kCHF (cash)
	· A contribution to the production of sensor characterization equipment	100 kCHF (in-kind)
	Total	200 kCHF

ITS3 C&I MoU will be signed in the coming months

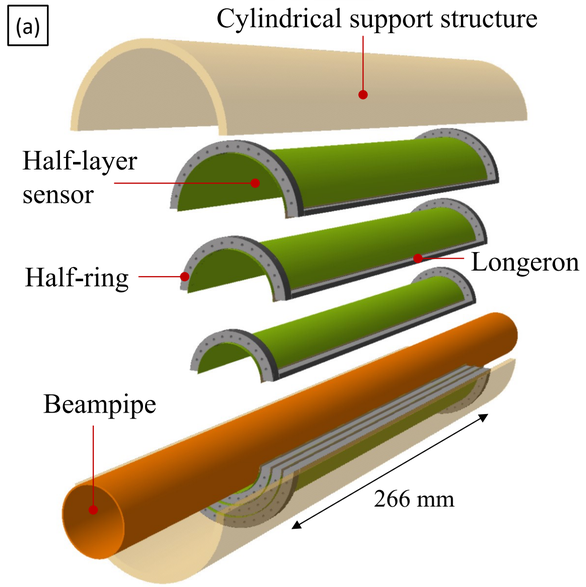
ALICE 3 R&D

- **KoALICE contribution to ALICE 3**
  - Opportunity to expand semiconductor detector development area: **ITS2 → ITS3 → ALICE 3**
  - Explore and select ALICE 3 R&D topic in 2022
  - Several KoALICE local meetings since May/2022 for intensive discussion on the direction of ALICE 3 R&D
  - Meetings with NRF & Ministry in July/2022 (dedicated) and March/2023

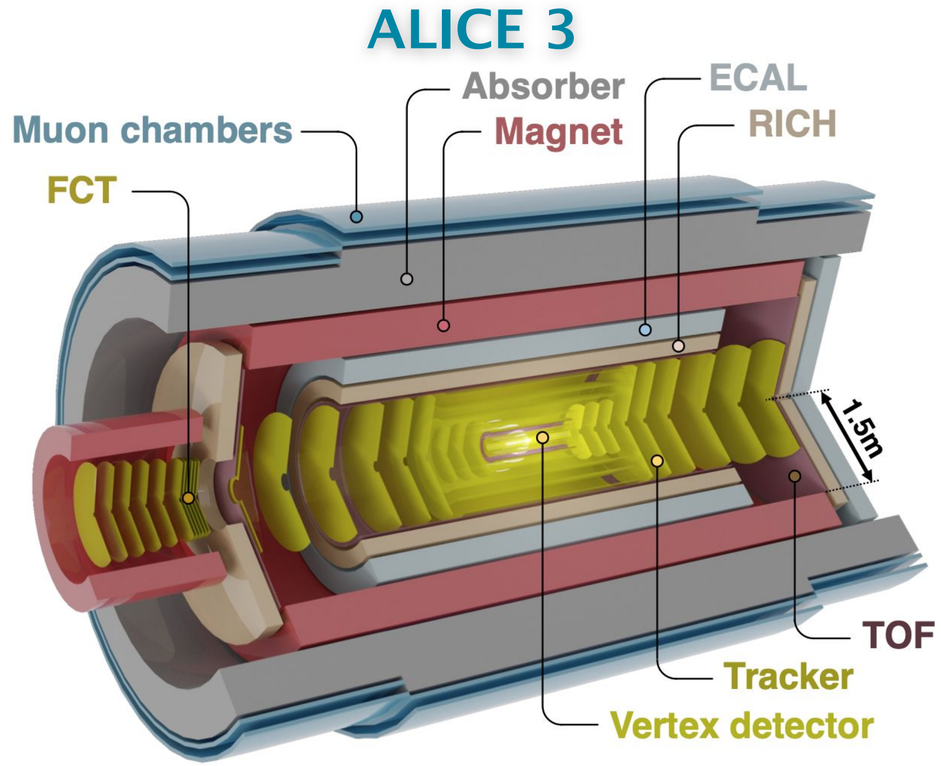
ITS2



ITS3



ALICE 3



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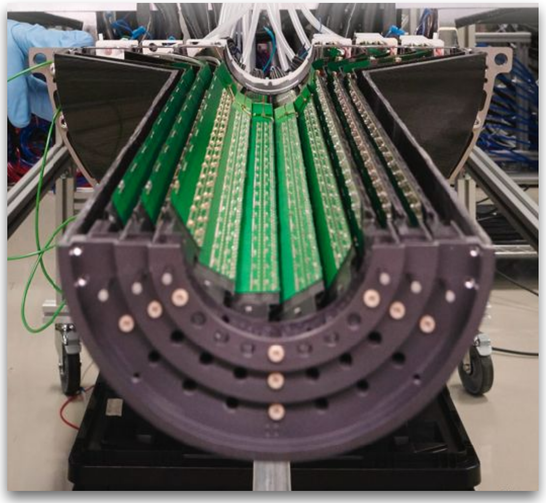
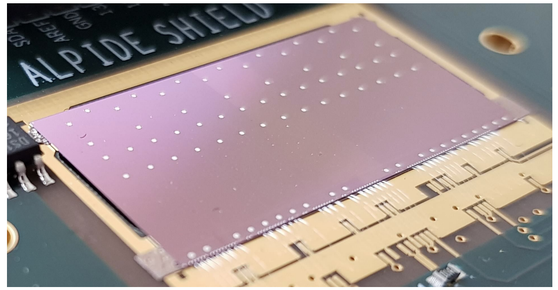
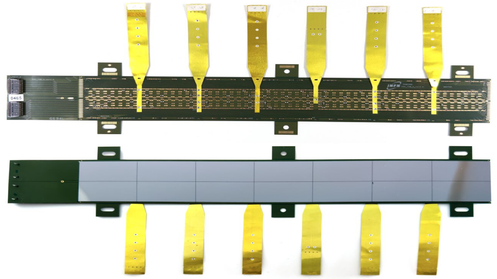


Korean ALICE team's activity

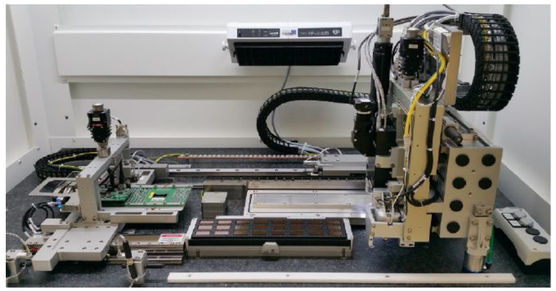
Industrialization of module assembly for ALICE 3 Outer Tracker
based on the experience from ITS2 project



[ITS2 sensor ALPIDE]



[ITS2 Hybrid Integrated Circuit (HIC) module]



[ITS2 Assembly machine, ALICIA]

ALICE 3 R&D

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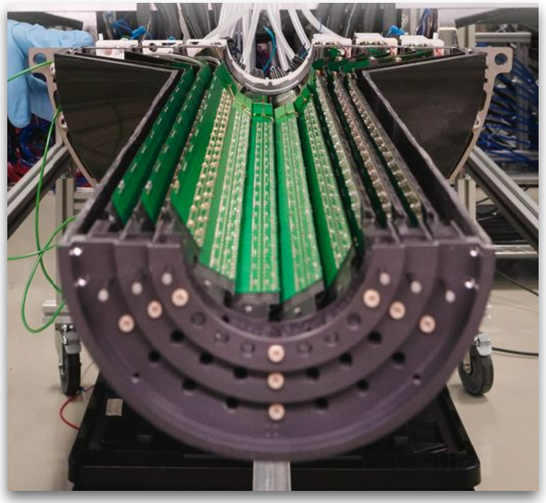
  - Explore and select ALICE 3 R&D topic in 2022
  - Several KoALICE local meetings since May/2022 for intensive discussion on the direction of ALICE 3 R&D
  - Meetings with NRF & Ministry in July/2022 (dedicated) and March/2023
  - **R&D on large scale industrial module assembly in collaboration with MEMSPACK in 2023**

ITS2



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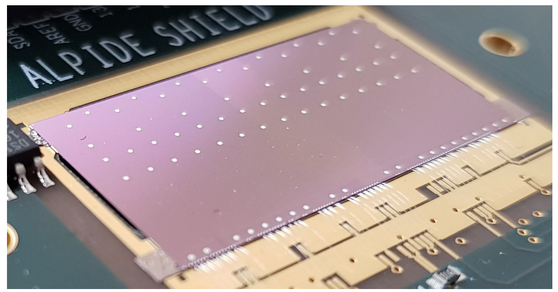
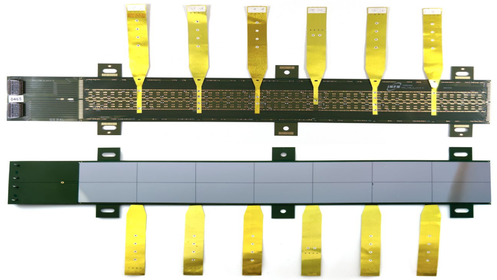
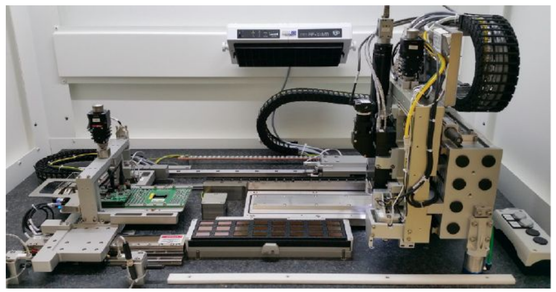


[ITS2 sensor ALPIDE]



[ITS2 Hybrid Integrated Circuit (HIC) module]



[ITS2 Assembly machine, ALICIA]

Korean group's activity for ALICE 3: Outer tracker

KoALICE

- **R&D for the large scale industrial production**
  - Automatization and industrialization of chip test and module assembly
  - Collaboration with MEMSPACK for ALICE 3 module assembly with a multi-purpose machine die bonder

Datacon 2200 evo+

MRSI 705

[General purpose die attach machines]

Integrated Dispenser
- Pressure/time (Musashi®), Auger, Jetter types available
- Epoxy stamping option
- Filled and unfilled epoxy, wide viscosity range
- Small footprint, low cost-of-ownership

Vision Alignment
- New high-speed image processing unit
- Full alignment & Bad mark search
- Pre-defined fiducial geometry & customized teaching

Automatic Wafer and Tool Changer
- Fully Automatic cycle for Multi-Chip production
- Up to 7 Pick & Place tools (optionally 14), 5 eject tools
- Stamping tools and calibration tools possible

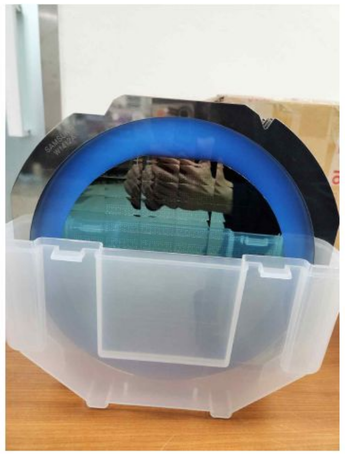
Pick & Place Head
- Die Attach, Flip Chip and Multi-Chip in one machine
- Die pick from: wafer, waffle pack, Gel-Pak®, feeder
- Die place to: substrate, boat, carrier, PCB, leadframe, wafer
- Hot and cold processes supported: epoxy, soldering, thermo-compression, eutectic

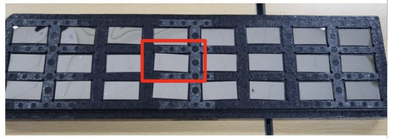
Korean group's interest for ALICE 3: Outer tracker

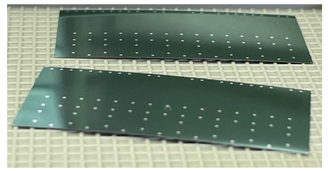
KoALICE

- **Dummy module production**
  - Dummy HIC production for machine validation: Obtained a good precision of chip positioning from the pick-and place procedure

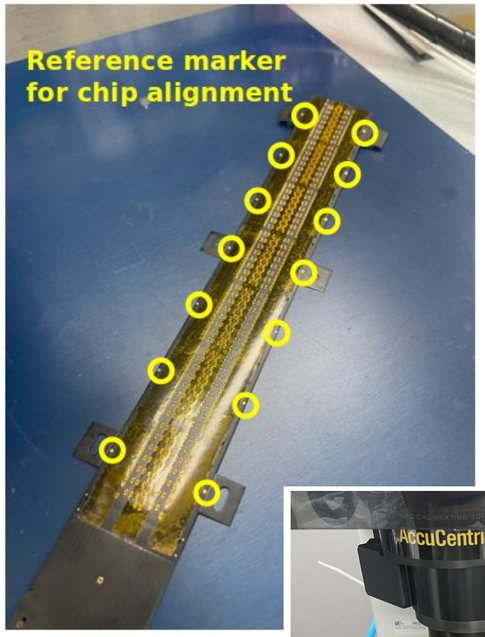
Dummy chips



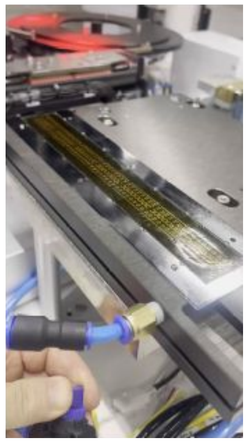


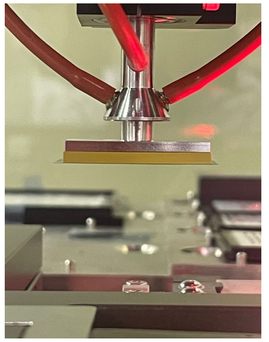


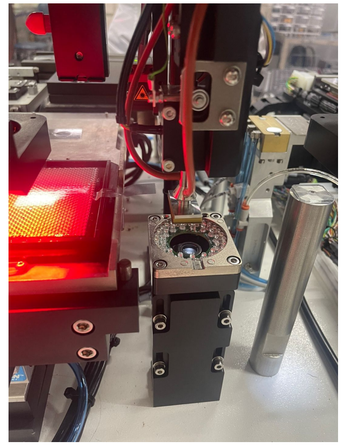
Dummy HIC



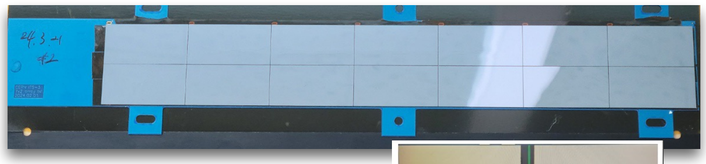
Preparation & patter scan



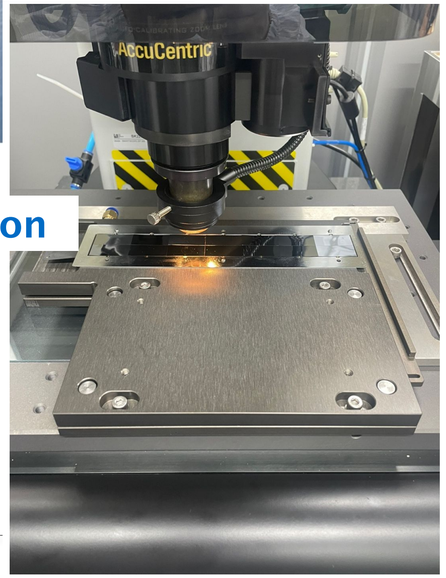


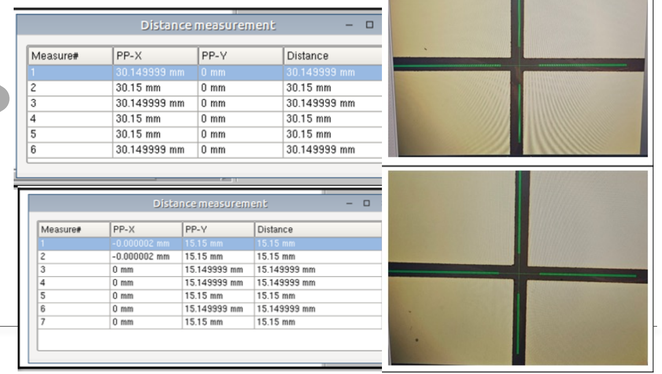


Chip positioning result



Module production





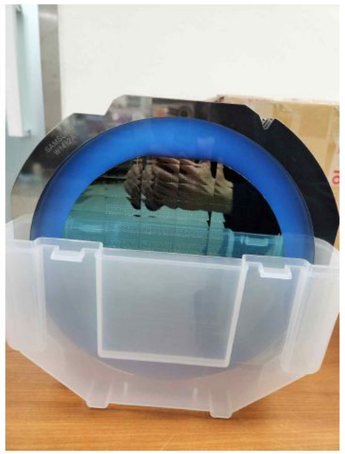
- **Successfully produced modules with a good position resolution (at this moment, using standard epoxy)**
- **Will test radiation hard glues**

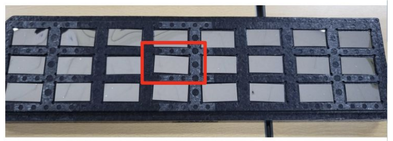
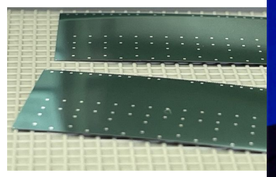
Korean group's interest for ALICE 3: Outer tracker

KoALICE

- **Dummy module production**
  - Dummy HIC production for m ce procedure

Dummy chips



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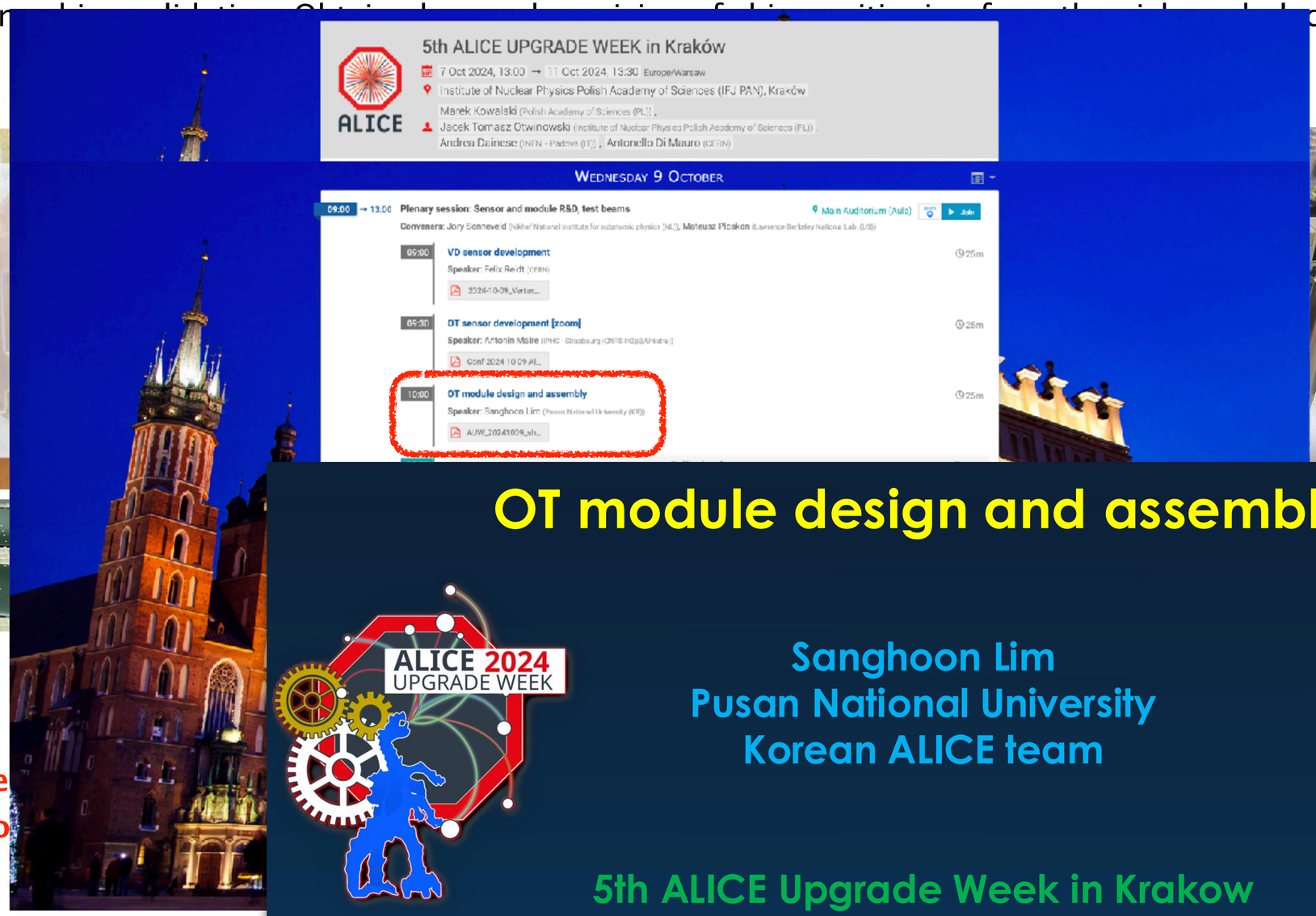
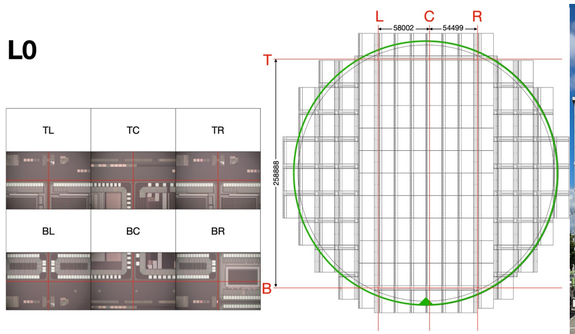


Korean group's interest for ALICE 3: Outer tracker

KoALICE

◉ **R&D on post processings**

- Wafer level chip testing (wafer probing: OKins, Dusan Tesna)
- Thinning and dicing (OKins, EngiON)



Business Scope - Main Test Products

OKins

Digital Part
- Wireless Charger IC
- Digital Audio Amp Modulator
- Touch IC
- ROIC (Read Out IC)

Optical Part
- Ambient Light Sensor (included under display ALS)
- Proximity Sensor
- RGB Sensor

Analog Part
- LED drive IC
- Motor drive IC
- Regulator (LDO)
- Converter (AC-DC / DC-DC)
- IR Receive IC
- Class-D Audio Amp Power Stage IC
- Automotive Power IC

Test Service

Sensor Element Part
- Hall Sensor
- MEMS Microphone Transducer Sensor
- Nano-wire optic sensor
- MEMS Thermopile temperature sensor

OKins: Wafer probing

Power Discrete Part
- MOS FET (Super Junction, Low Voltage, IGBT, etc)
- SiC Power Discrete (MOS FET, Diode)

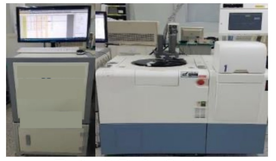
Module Part
- Water level – Vibration Multi Sensor Module
- Pressure sensor Module

MOSFET Wafer Test

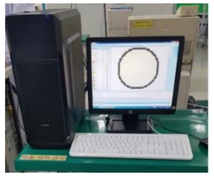
OKins

✓ MOS FET Wafer testing system configuration.
- 1,000V / 20A @ 8-Parallel, Applied of 4-Terminal test
- 2,000V / 300A @ 4-Serial

✓ Probe Station : Thin Wafer Option (150um)
- 4 / 5 / 6 / 8 / 12 inch
- Inking Probe : 3set



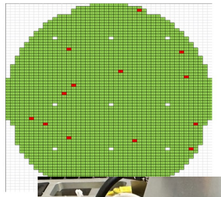
Tester & Probe System

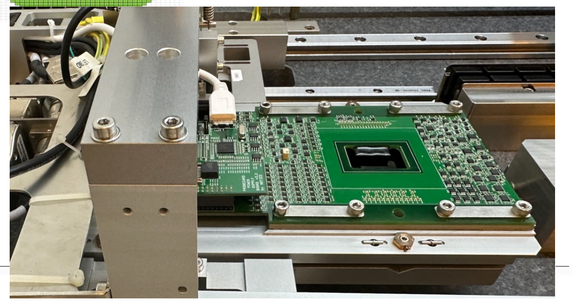


Test monitoring & control system

✓ MOS FET Wafer Test Capacity : 12,500wfs/month
(Test time : 350msec, Net die : 5K)

✓ Current Production Q'ty : 6K-wfs/monthly





두산테스나/엔지온 사업 영역

테스트와 연결되는 연마/절삭/리컨 역량 확보를 위해 2024년 엔지온 인수

DOOSAN Tesna

웨이퍼 테스트 (EDS)
- 전공정을 거친 웨이퍼에 위치한 **반도체 칩의 양품/불량품 선별 과정**
- 불량칩이 패키징되는 것을 방지해 원가 절감
- 테스트 결과를 기반으로 공정/제품 설계의 문제점을 파악하여 개선 조치 실행 가능

웨이퍼 내 개별 칩 (Die)의 불량여부 판별

EngiOn엔지온

리컨 공정 (Reconstruction)
- EDS 완료된 웨이퍼 후면에 연삭 및 연마 진행 후, 개별 chip 분리하여 **양품 chip만 재배열 하는 공정**
- 저화소부터 고화소용 CIS 불량 제품을 선별해 출하 방지하여 품질 비용 절감
- 후공정 yield loss를 최소화하여 효율적인 모듈 PKG 구현 가능

CIS 웨이퍼에서 양품 칩을 선별해 재배열

CIS Reconstruction Process

Dusan Tesna: Wafer probing

ALICE 3 MoU

KoALICE

◉ **ALICE 3 R&D MoU: total 1.2 MCHF for three years (2025-2027)**

?	Contents	Contributions
Memorandum of Understanding for collaboration in the construction of the ALICE experiment participation of National Research Foundation of Korea (NRF) in the ALICE 3 project	KoALICE engage to contribute to the ALICE 3 Outer Tracker with different items as described below:	
	· A partial contribution to the processing costs of CMOS sensors	200 kCHF (cash)
	· A contribution to the employment of R&D personnel, including engineers and technicians	180 kCHF (in-kind)
	· An in-kind contribution to the production of testing equipment for CMOS sensor characterization	100 kCHF (in-kind)
	· A contribution to the R&D and production of automation equipment and components for module assembly in Korea	350 kCHF (in-kind)
	· A contribution to the wafer testing process, to be conducted in Korea	150 kCHF (in-kind)
	· A contribution to the production of wafer testing equipment and electronic boards, to be produced in Korea	100 kCHF (in-kind)
	· A contribution to the fabrication of stave module production equipment and components, to be produced in Korea	120 kCHF (in-kind)
	Total	1.2 MCHF

Most of the KoALICE institutes will be involved. Will be signed today!

Visits by collaborators from Germany and Japan

2024. May

2024. October

◉ **Collaborators from Germany and Japan visited KoALICE insitutues, MEMSPACK, C-ON tech**

- Discuss collaboration especially on R&D related to ITS3 and ALICE 3

Summary

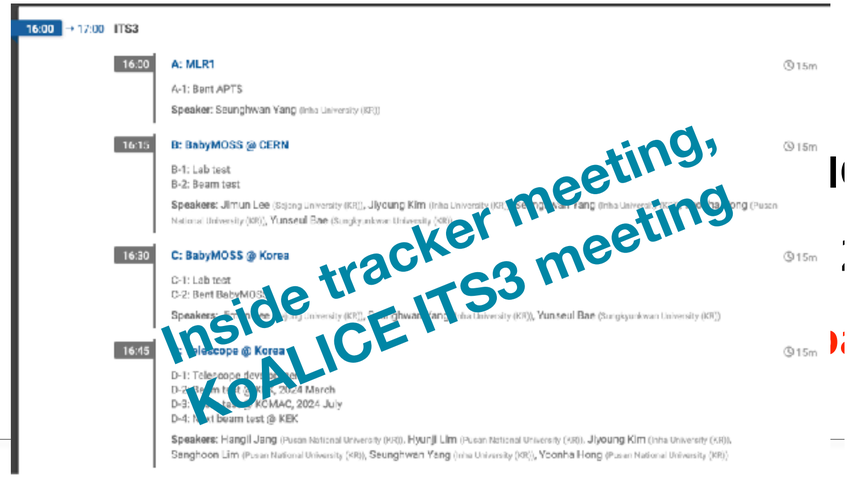
Within KoALICE, there are also many local working group meeting

⇨ very collaborative effort!!!

Korean ALICE National Workshop

14-16 Jan 2024, Jeju Island

64 participants including KISTI !



Inside tracker meeting, KoALICE ITS3 meeting

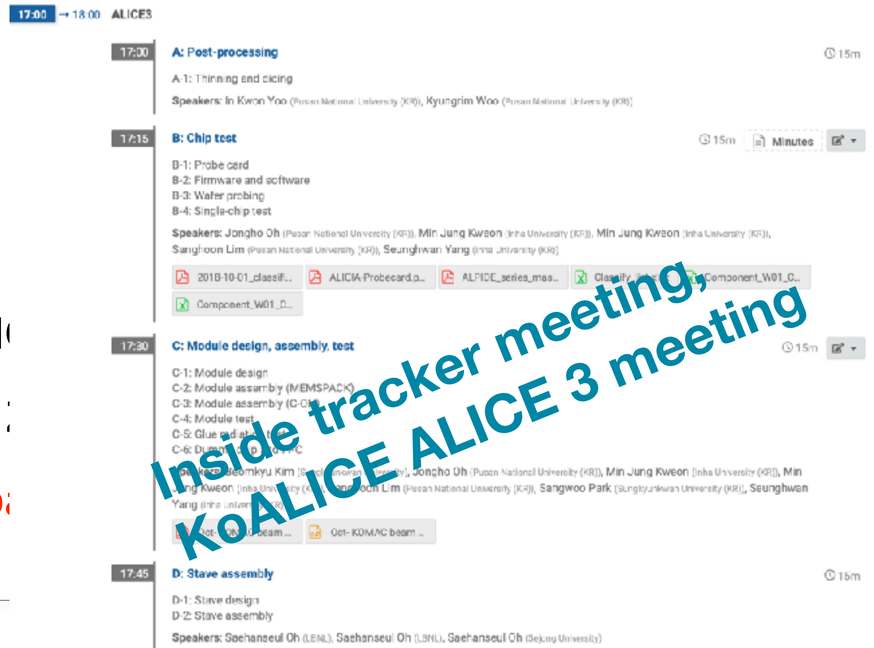
October 2024

- 30 Oct koALICE JET working group meeting
- 22 Oct KoALICE heavy flavor working group meeting
- 16 Oct koALICE JET working group meeting
- 08 Oct KoALICE heavy flavor working group meeting
- 04 Oct koALICE JET working group meeting
- 02 Oct koALICE JET working group meeting

September 2024

- 26 Sept KoALICE Tracker Meeting
- 19 Sept KoALICE Tracker Meeting
- 13 Sept - 14 Sept koALICE JET working group meeting
- 12 Sept KoALICE Tracker Meeting

Very collaborative!



Inside tracker meeting, KoALICE ALICE 3 meeting

Thank you