

Report from SDU ATLAS Group

Bing Li

Shandong University

ATLAS-China Faculty Meeting
Zhengzhou, April 25, 2026



Overview of SDU ATLAS Group

- Currently, there are 8 faculties together with ~10 graduates
- 5 members are counted for M&O

M&O



张学尧 教授
Xueyao Zhang



冯存峰 教授
Cunfeng Feng



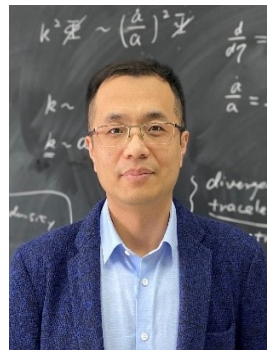
祝成光 教授
Chengguang
Zhu

M&O



马连良 教授
Lianliang Ma

M&O



李海峰 教授
Haifeng Li

M&O



李冰 教授
Bing Li



胡坤 研究员
Kun Hu

M&O



刘彦麟 教授
Yanlin Liu



刘佩莲 教授
Peilian Liu

Highlights of recent detector upgrade work

HGTD: FT status and plan

Kun Hu

Status & Plan:

- ✓ 54 Flex Tail (FT) production for module demonstrator, they are still under test.
- ✓ Production assignment of the Flex tail for four countries. China will be responsible for the 19 FTs (right table) in pre-production and final production.



caliper



micrometer



	Length (mm)	Category	Serial Number Pre-production batch 1, first 11 digits only, add counter 000-999	Serial Number Production batch 1, first 11 digits only, add counter 000-999 at the end	Total number	Pre-production	Production
2							
3	475.8	29	20WFTCP1F29	20WFTCM1F29	158	15	143
4	495.4	27	20WFTCP1F27	20WFTCM1F27	99	10	89
5	507.9	26	20WFTCP1F26	20WFTCM1F26	80	8	72
6	516.9	24	20WFTCP1F24	20WFTCM1F24	138	13	125
7	530.4	23	20WFTCP1F23	20WFTCM1F23	80	8	72
8	540.1	22	20WFTCP1F22	20WFTCM1F22	80	8	72
9	545.4	20	20WFTCP1F20	20WFTCM1F20	41	5	36
10	549.1	19	20WFTCP1F19	20WFTCM1F19	88	16	72
11	572.2	16	20WFTCP1F16	20WFTCM1F16	80	8	72
12	581.2	13	20WFTCP1F13	20WFTCM1F13	89	17	72
13	584.1	12	20WFTCP1F12	20WFTCM1F12	21	3	18
14	604.3	10	20WFTCP1F10	20WFTCM1F10	80	8	72
15	613.3	8	20WFTCP1F08	20WFTCM1F08	80	8	72
16	614.5	7	20WFTCP1F07	20WFTCM1F07	41	5	36
17	632.7	6	20WFTCP1F06	20WFTCM1F06	22	4	18
18	636.5	5	20WFTCP1F05	20WFTCM1F05	80	8	72
19	639.4	4	20WFTCP1F04	20WFTCM1F04	21	3	18
20	645.5	3	20WFTCP1F03	20WFTCM1F03	80	8	72
21	683.5	1	20WFTCP1F01	20WFTCM1F01	30	12	18
22	Totals						

HGTD: HV PS status and plan

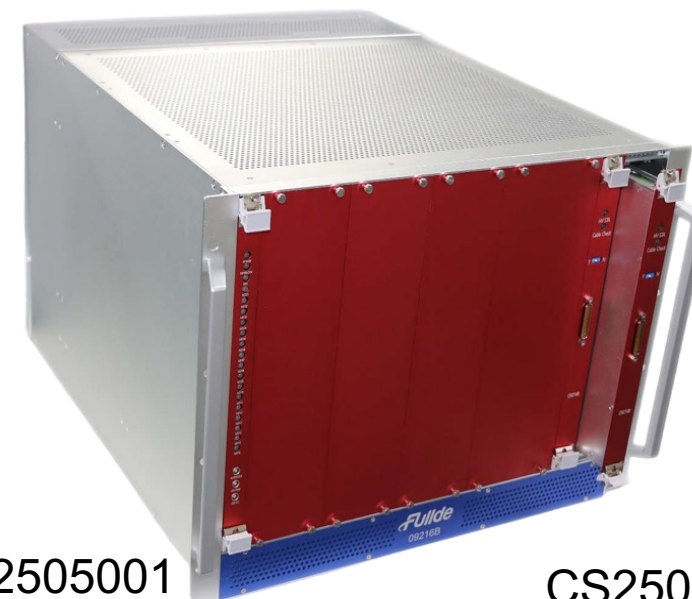
Kun Hu, Yanlin Liu

In pre-production stage, **two HV crates** were produced in Fude factory last summer, following the bidding specification documents:

1. Temperature cycling and aging test
2. Control and monitoring communication tests
3. Output voltage and current tests
4. Protection tests
5. Interlock functionality test
6. LED indicators test
7. Quality inspection of inside of Supply components
8. Efficiency test.

All parameters of the high-voltage power supply (HV PS) has been tested and **passed the documents**.

HV cables and filters are delayed in foreign company. So **HV mass production expect to be started at the end of this May**.



CS2505001

CS2505002



RPC @MPI: status

Cunfeng Feng

- * Setup the working area
- * Edging of the R0 board: 160 done
- * Cutting of the R0 board: 55 done
- * Singlet production: 9 done
- * FEBs: 60/70 passed test
- * Faraday Cage: 18 built



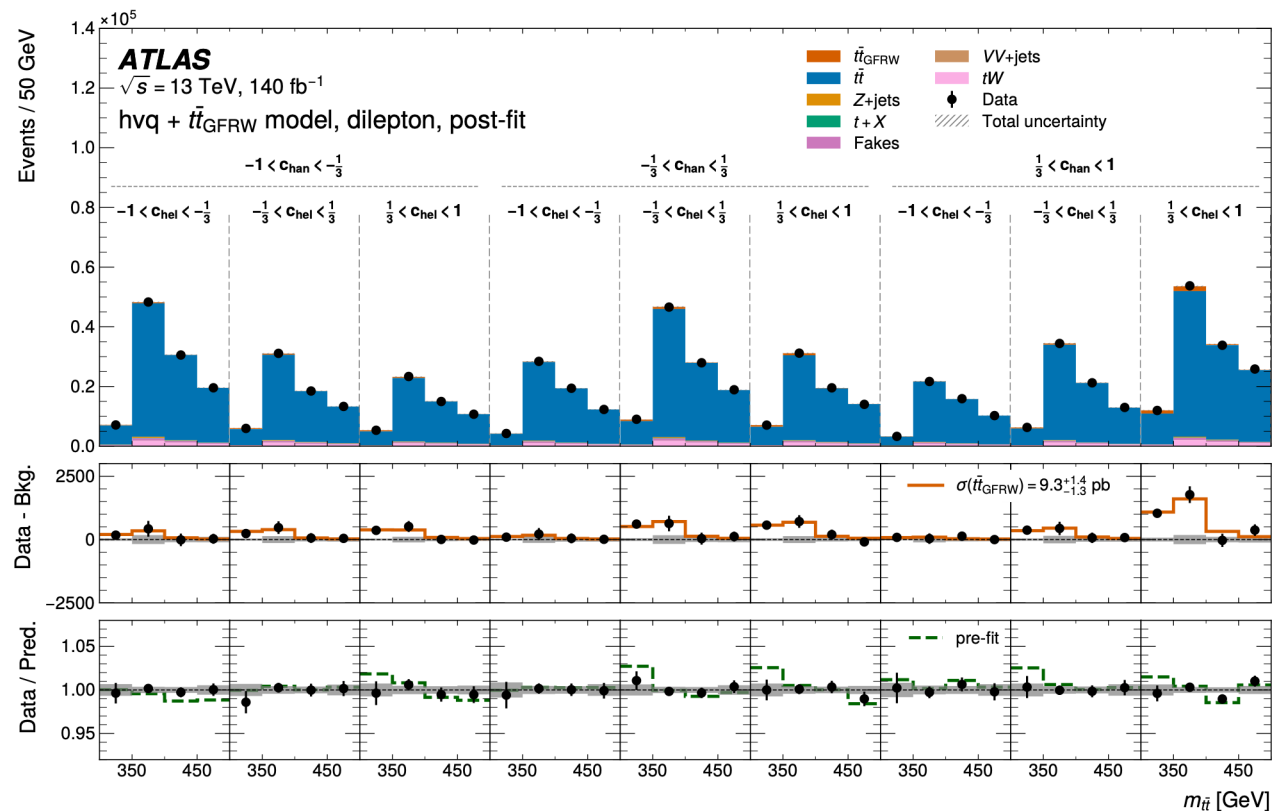
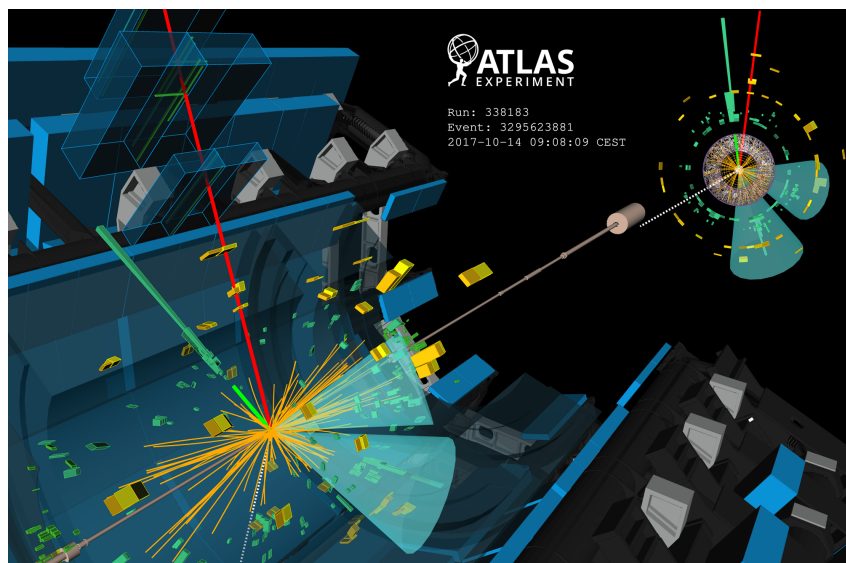
Highlights of recent analysis work

Observation of Toponium

Accepted by ROPP

arXiv:2601.11780

Observed (expected)
significance: 8σ (6σ)



Contribution from SDU: Haifeng Li, Xinyan Liu

贡献：主要分析者；独立产生结果（从事例判选到统计结果）；系统误差；

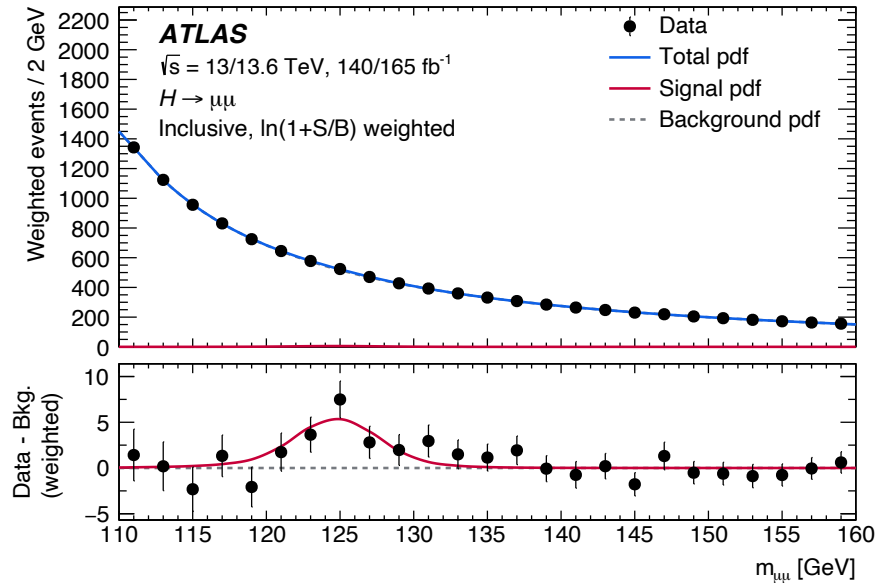
Results firstly presented at EPS-HEP2025 by Haifeng Li on behalf of ATLAS collaboration

[[ATLAS Physics Briefing](#)]

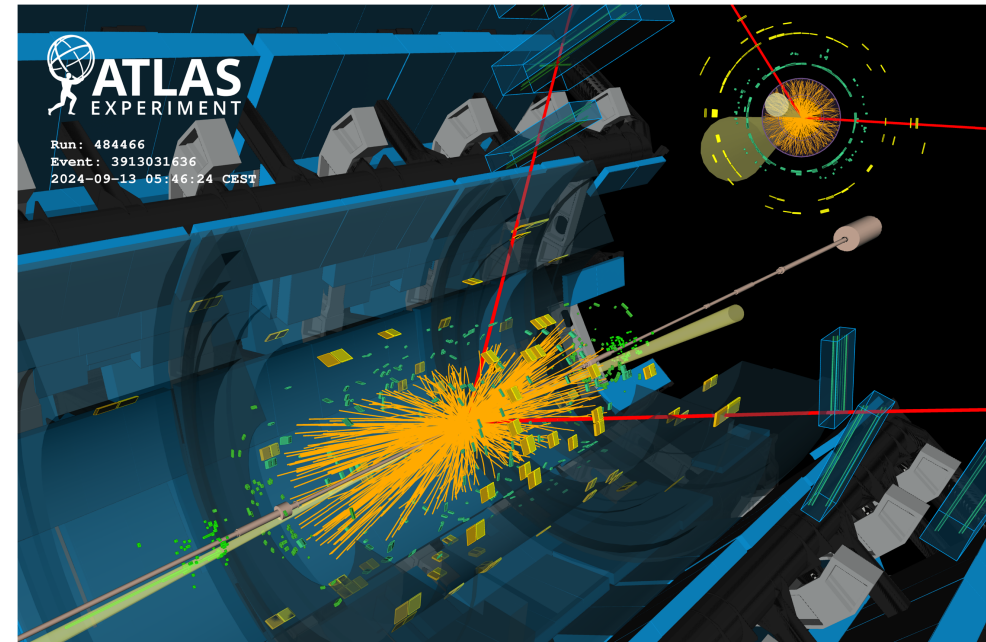
[[CERN Press Release](#)]

Evidence of $H \rightarrow \mu\mu$

[Phys. Rev. Lett. 135, 231802 \(2025\)](#)
Editor's Suggestion



- 信号显著度: 3.4σ (2.5σ exp.)
- 在ATLAS实验上首次观测到希格斯粒子和第二代费米子耦合的迹象



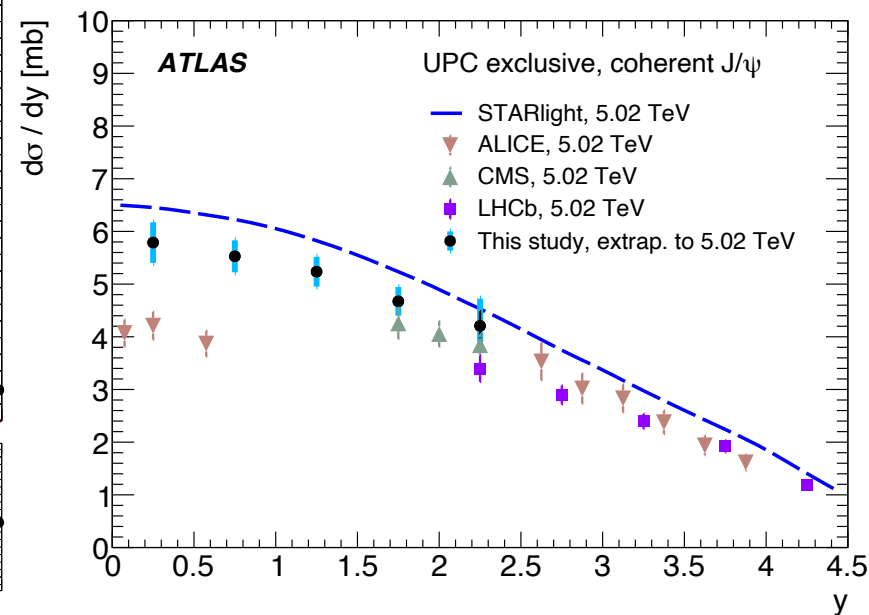
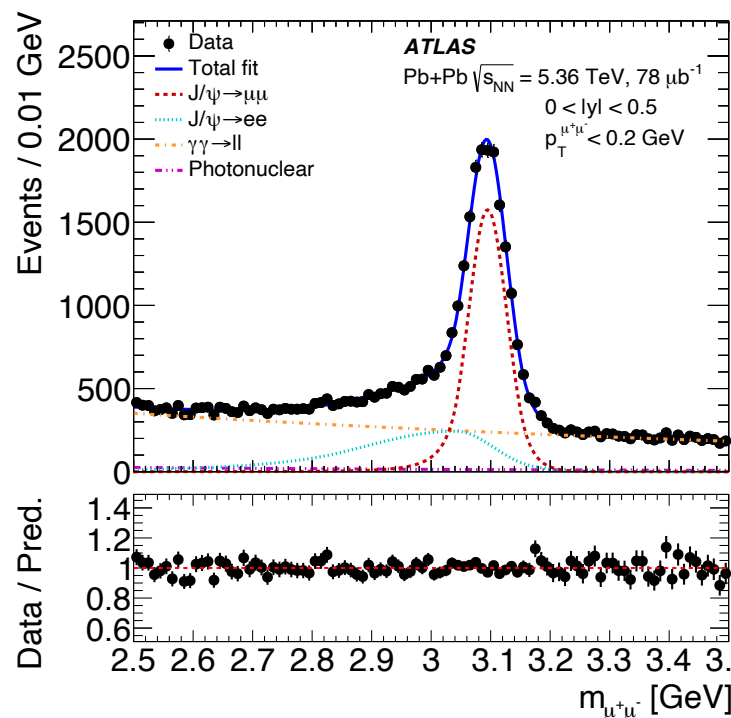
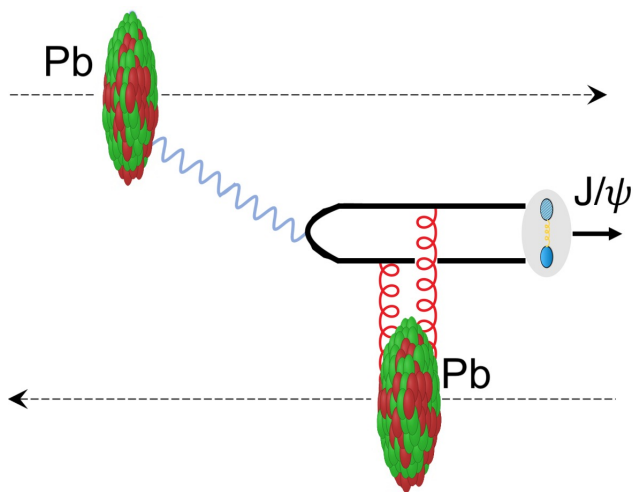
Contribution from SDU:

- Haifeng Li (proposed and initialized the $H\mu\mu$ analysis), Yanlin Liu (one of the analysis contact)
- Lu Zheng, Haotian Liu

Observation of coherent J/Psi in UPC

以超过5倍标准偏差的显著度观测到相干 J/ψ 产生，并且在大快度区间测量了相干 J/ψ 的微分界面，填补了之前ALICE、CMS、LHCb实验测量的空白区间。

[JHEP 04 \(2026\) 020](#)

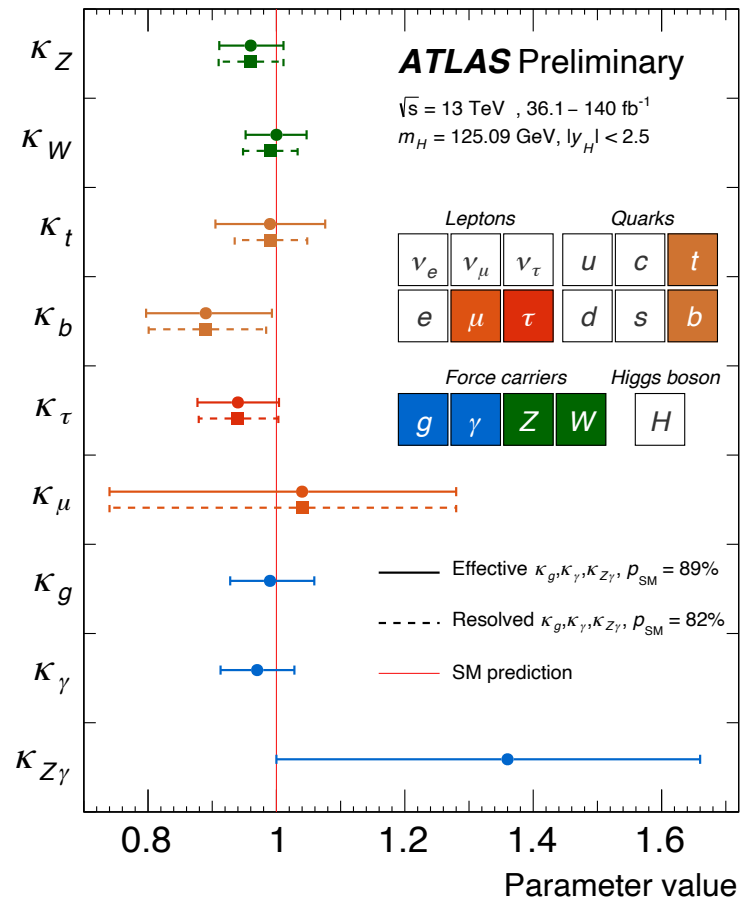
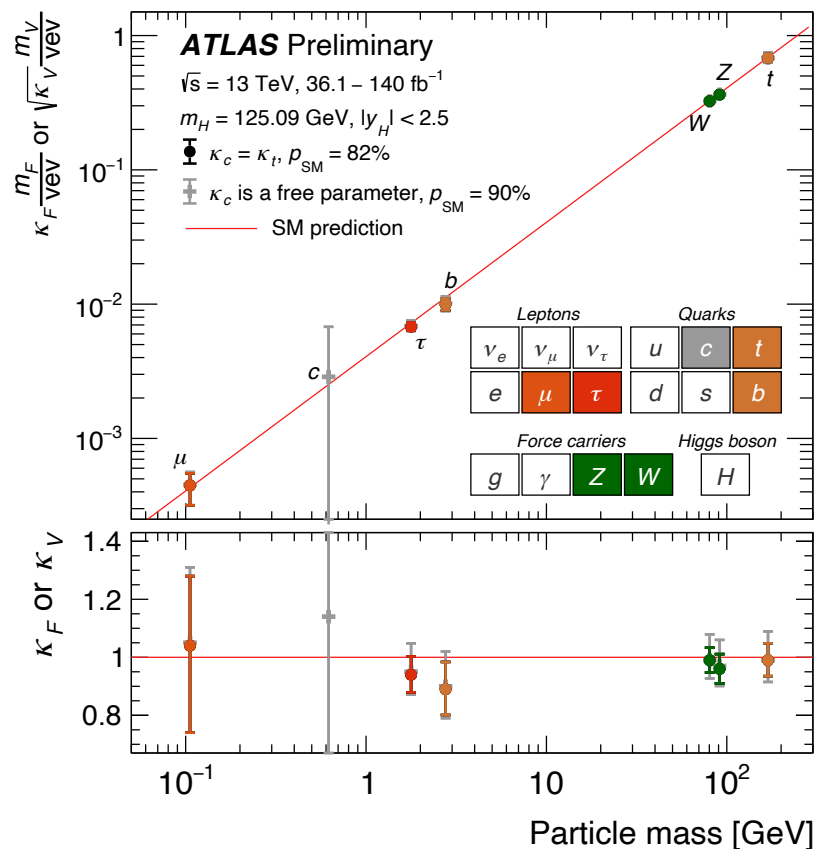


人员:

- Xinyan Liu (pre-approval)
- Haifeng Li

Higgs coupling combination

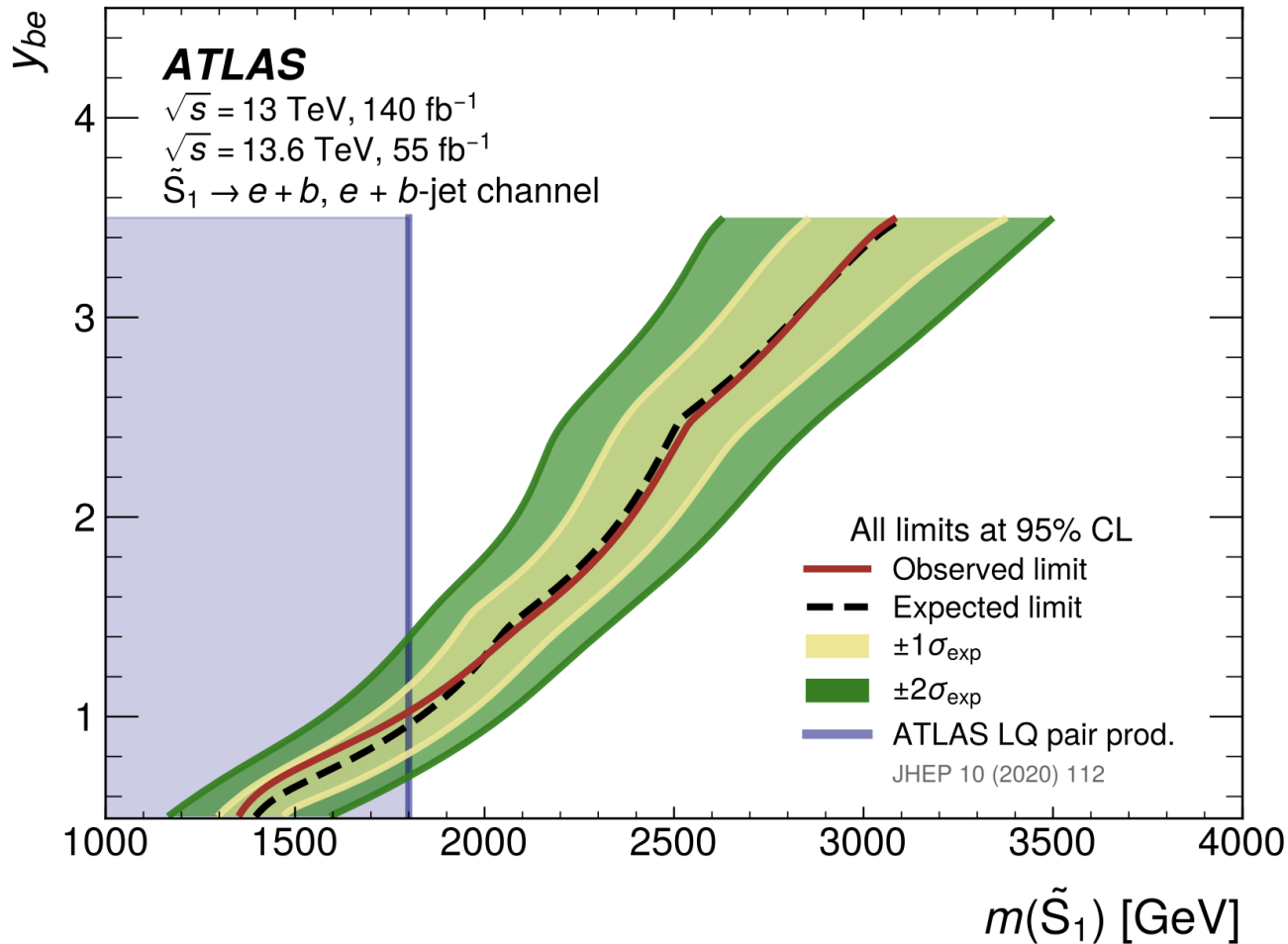
Run 2 legacy Higgs coupling combination



[ATLAS-CONF-2025-006](#)

SDU: Haifeng Li, Shiya Duan
 Contribution: VHbb/cc NP
 correlation; 整体拟合

Run-3: Search for $LQ \rightarrow \text{lepton} + \text{jet}$

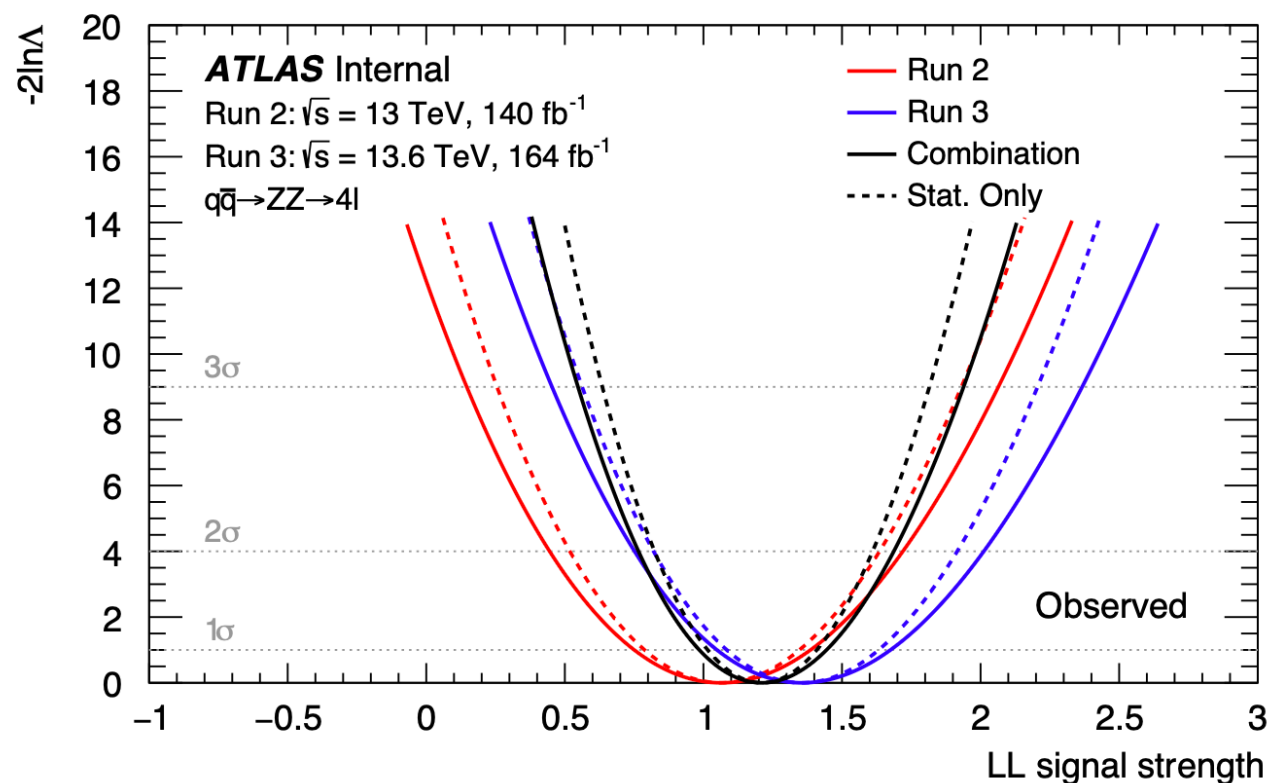
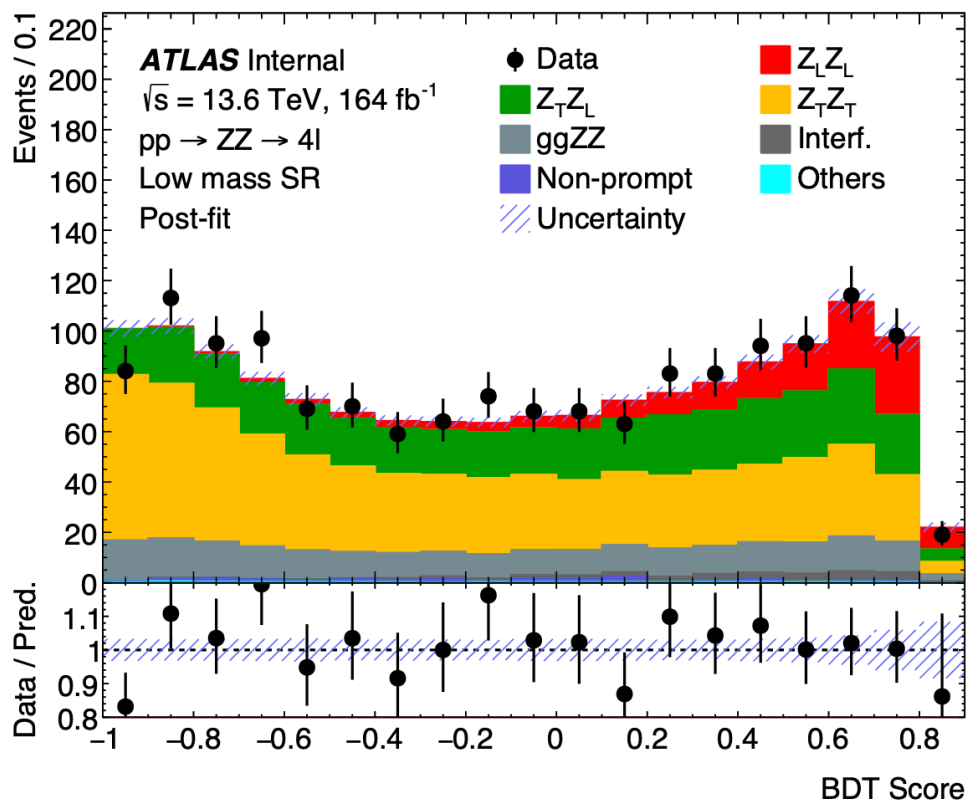


JHEP 12 (2025) 180

Search for resonantly produced LQs using full Run-2 and partial Run-3 (2022-2023) data
No statistically significant excess found, exclusion mass limits set up to 3 - 4 TeV depending on the LQ couplings

Contribution: **Yanlin Liu** serving as Contact Editor, supervision of the work for entire e+b-jet channel

ZZ polarization with Run 2 + partial Run 3



Unblinded. Observed (expected) significance of ZLZL: 5.5 (4.8) σ

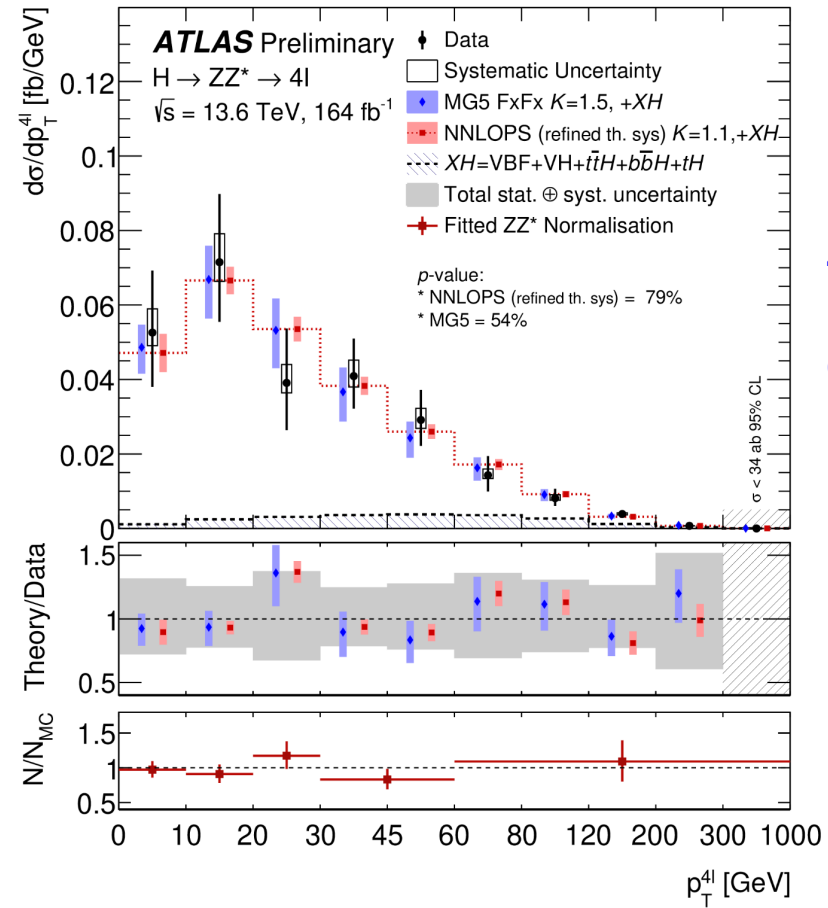
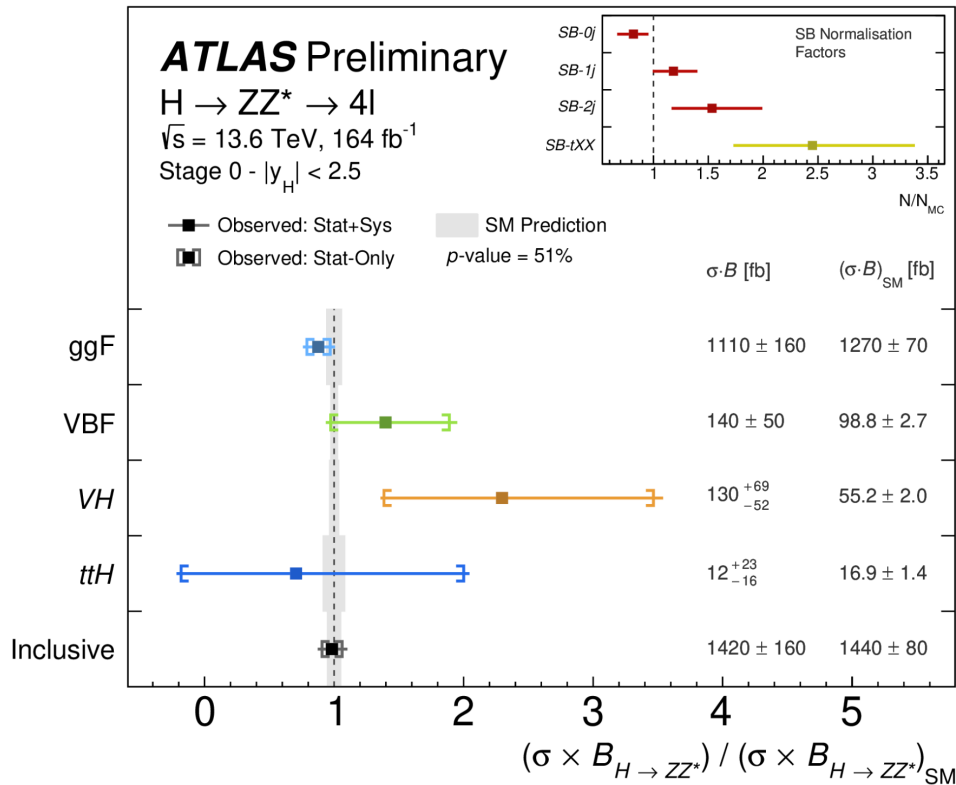
Zhuolin Zhang: background estimate, electron trigger SF

Bing Li: one of the contact editors

Higgs $ZZ^* \rightarrow$ four lepton cross section

* Partial Run 3 data

ATLAS-CONF-2026-003



Contribution from SDU:
 Zhuolin Zhang, Bing Li

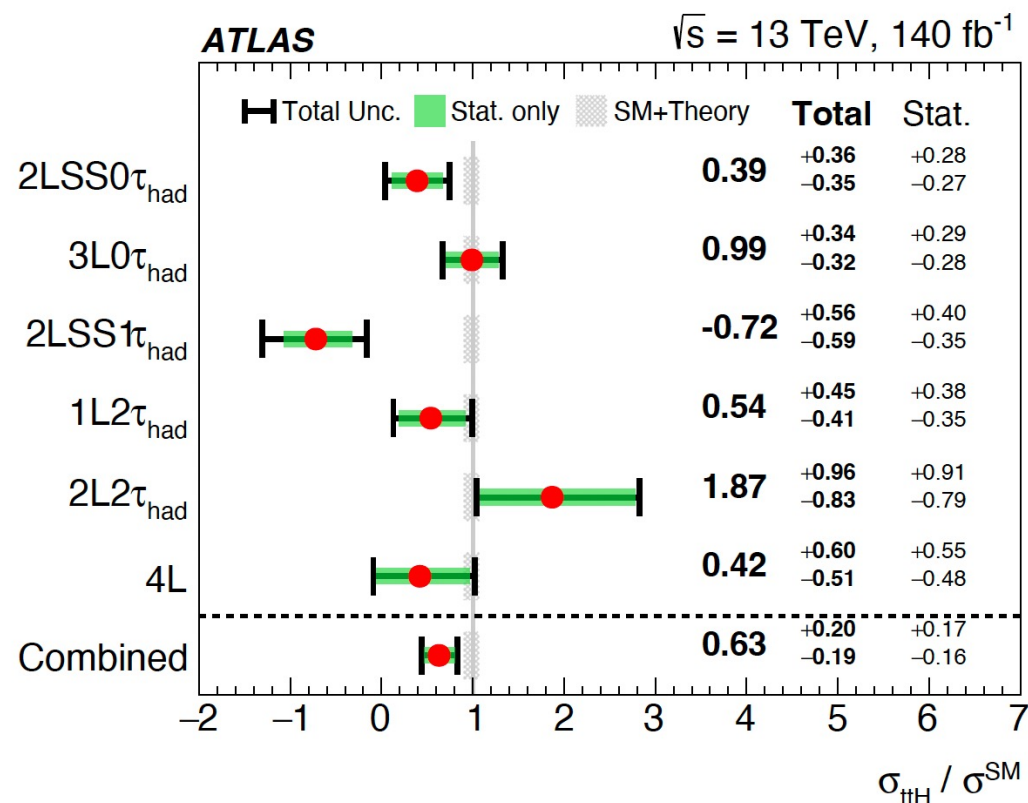
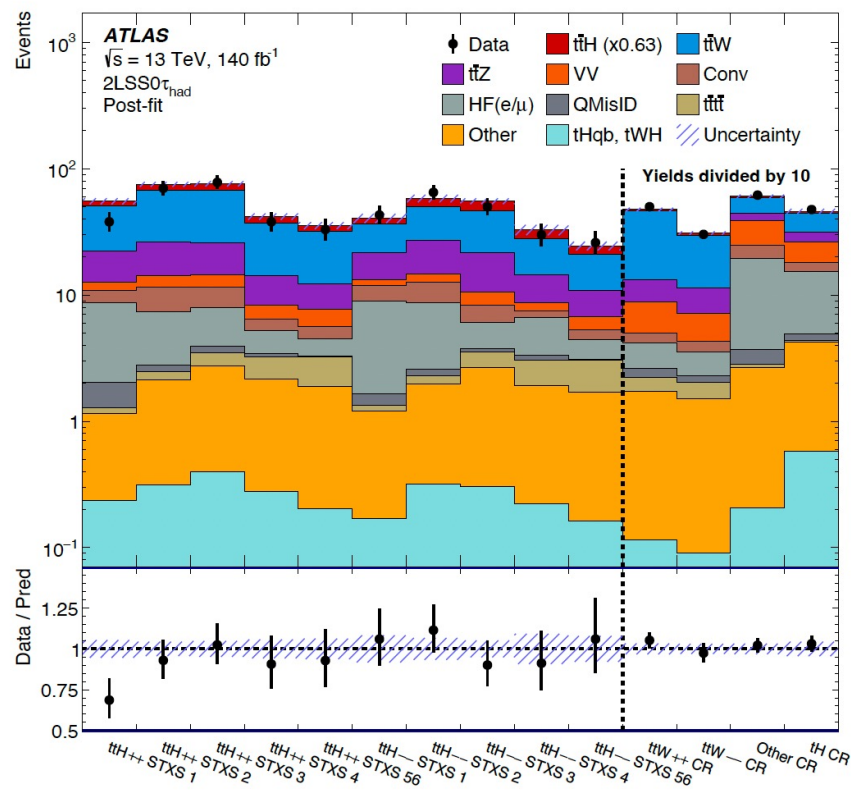
qqZZ modeling study,
 kLambda interpretation

ttH, H → multi-lepton

arXiv:2510.23755

Main contribution: the 2LSS analysis: MVA optimization, Control Region definition, and Statistical treatment

Manpower: Chen JIA, Ze TAO, Lianliang MA



Significance: 3.3 σ (5.3 σ exp.)

EOI to host ATLAS-China Faculty meeting @Qingdao in 2027

- * SDU is interested in hosting the ATLAS-China Faculty Meeting in 2027
- * Tentative date: ~April 20th 2027
- * Thanks in advance for considering our proposal and looking forward to having you in Qingdao for fruitful discussion!

Summary

- * Presented the highlights of detector upgrade and physics analysis work from SDU group, focused on works done after last year' s CLHCP
- * Grateful for the longstanding support of Chinese ATLAS community
- * Anticipate strengthened cooperation in physics, hardware and funding partnerships moving forward

Backup

HGTD: Manpower

- **Yaning Hou** and **Xiaohan Sun** got CSC support
 - ✓ **Yaning Hou** will arrive at CERN this summer. She will take over Chuijinag's work for HV testing. Also, the FT preproduction may start this year. She will finish the reception test of the FTs at CERN.
 - ✓ **Xiaohan Sun** is going to CERN with Yaning. Xiaohan will focus on the development and test of the DAQ system for the detector module.

已完成工作

- * 工作区域规划和布置
- * 读出板包边：160块
- * 读出板切角：55块
- * Singlet制作：9个
- * Febs测试：70个
- * 法拉第笼制作：18个

1、工作区域规划和布置



根据现有的工作台把大厅分为包边区域，组装区域和焊接区域，可以更好的进行工序的流转。

2、读出板包边



已经完成读出板包边160块，现在因为工作针对singlet和febs的组装焊接为主，已经暂停。

3、读出板切角



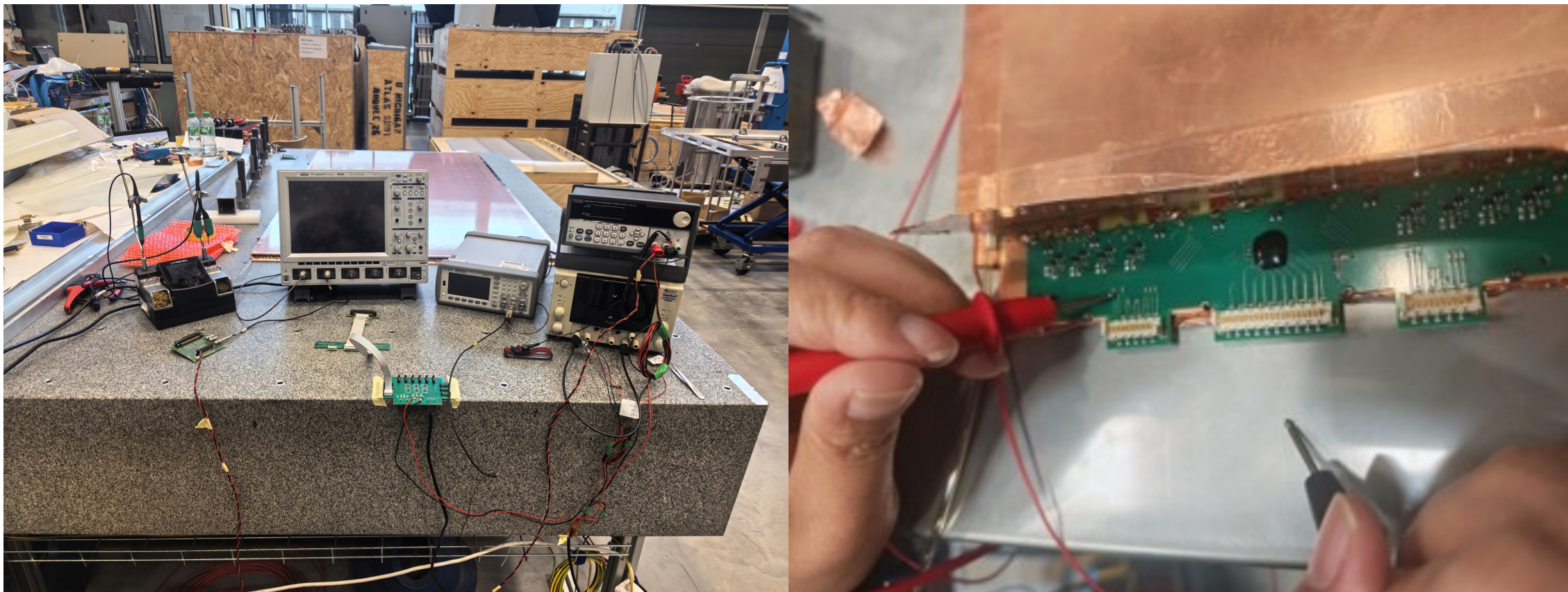
已经切好55块，并完成角包边处理。

4、singlet制作



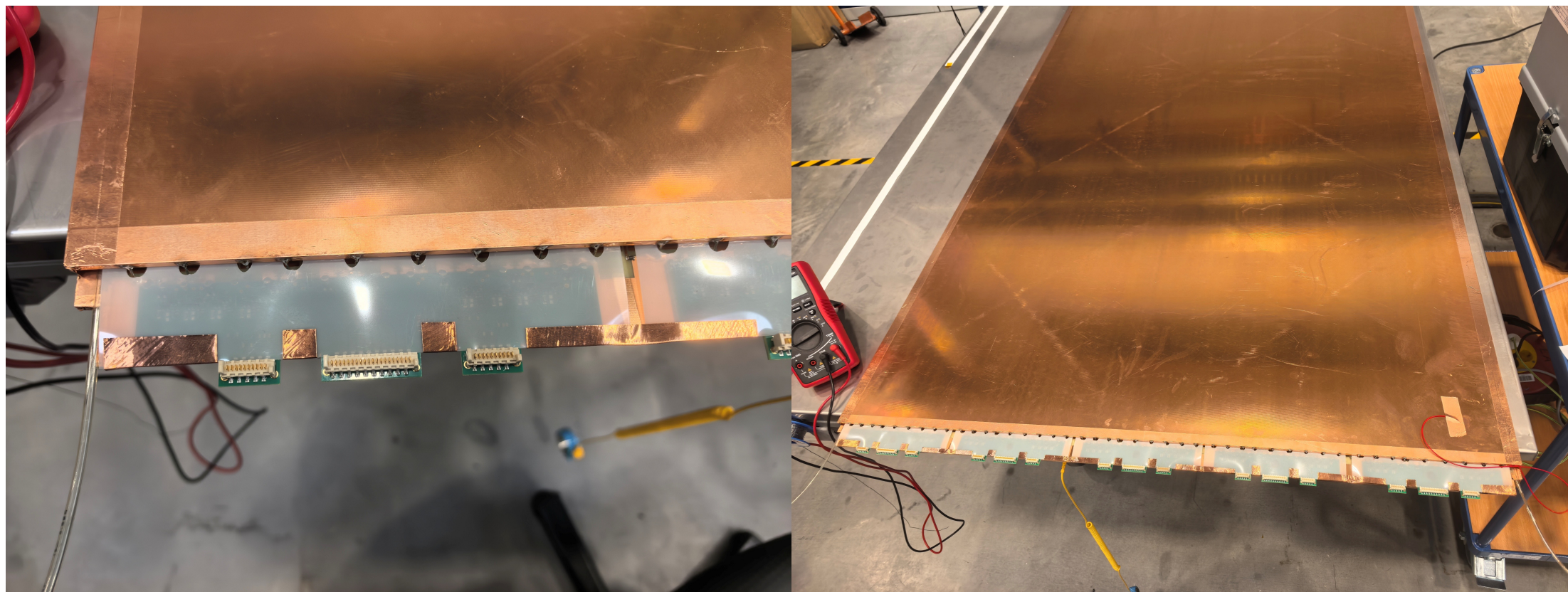
已经完成9个完整的
singlet。

5、Febs测试



我们使用搭建测试平台，对febs进行每道工序前后测试，目前已测70个，合格60个。

6、法拉第笼制作



对已经完成febs测试的singlet，制作法拉第笼，目前已经完成18个。