Zirui Wang 王子瑞

Curriculum Vitae

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Research Profile 研究简介

Zirui's research focuses on the high-energy frontier of the experimental particle physics, particularly in the areas of **precisely measuring Higgs boson properties** and **searching for dark matter**.

As the lead analyzer and analysis contact, Zirui has **significantly improved the precision of Higgs interaction measurements**, with results published in ***Nature*** in 2022. He has also established the **most stringent upper limit on the Higgs invisible decay branching ratio** on LHC to date and achieved **the best sensitivity for the LHC dark matter benchmark model 2HDM+a**. Additionally, Zirui is the system expert for calibrating the ATLAS muon drift tube detector and contributed to ATLAS muon detector HL-LHC upgrade.

Zirui's work (as the analysis contact or primary author) has garnered over 2700 citations according to the INSPIRE database, including 9 publications cited more than 100 times.

王子瑞长期从事高能量前沿LHC实验研究，专注于希格斯玻色子性质的精确测量，并利用希格斯玻色子作为工具探寻超出标准模型新物理，尤其是暗物质粒子等。王子瑞作为主要分析者和分析负责人，将希格斯相互作用精度提升到全新水平，成果于2022年发表于Nature。此外，王子瑞获得迄今LHC上最严格的希格斯粒子不可见衰变上限，以及基于LHC暗物质基准模型2HDM+a迄今最好的实验探测灵敏度等重要成果。根据INSPIRE数据库统计，王子瑞发表论文合计被引2700余次，其中有9篇被引用超过100次。他于2024年入选国家级青年人才计划。

Professional Experience 工作经历

2025.3 - Pres. | **Fudan University** 复旦大学
Assistant professor 青年研究员

2020.1 - 2025.2 | **University of Michigan, Ann Arbor** 美国密歇根大学安娜堡分校
Postdoctoral research fellow 博士后
- Advisor: Bing Zhou

Education 教育经历

2015.9 – 2017.9 | **University of Michigan, Ann Arbor** 美国密歇根大学安娜堡分校
Joint Ph.D. student 联合培养博士生
- Advisor: Jianming Qian

2014.9 – 2019.12 | **Shanghai Jiao Tong University** 上海交通大学
Ph.D., Particle Physics 博士*(*粒子物理方向*)*
- Advisor: Haijun Yang
- Dissertation: Combined measurements of Higgs boson properties using 13 TeV proton–proton collision data collected with the ATLAS detector
- 博士论文: 利用ATLAS探测器累积大型强子对撞机13TeV数据测量标准模型希格斯玻色子产生截面和耦合参数
- Date receiving the PhD degree: 2019.12

2010.9 – 2014.6 | **Shanghai Jiao Tong University** 上海交通大学
B.S., Physics 学士（物理学）
- Advisor: Haijun Yang
- Undergraduate Thesis: Study of the position resolution of RPC-based muon imaging systems
- 本科论文: 基于阻性板探测器（RPC）的缪子成像系统位置分辨研究

Leadership and Coordination Positions 国际实验合作组中的领导和协调职务

October 2022 - December 2024 | **ATLAS Experiment Contact Person of the LHC Dark Matter Working Group**. Primary responsibilities include organizing effort to define guidelines and recommendations for dark matter searches at the LHC.
LHC暗物质工作组ATLAS实验联络人

October 2022 - October 2024 | **Convener of Physics Subgroup** for the common dark matter (CDM) working group in ATLAS, a joint physics group with the ATLAS Exotics, HDBS, Higgs and SUSY physics groups. Primary responsibilities include proposing and overseeing ATLAS DM analyses.
ATLAS暗物质物理分析组负责人

January 2024 - December 2024 | **Contact Person** for an analysis searching for heavy resonances decaying into a pair of Z bosons, in both $ZZ \to 4l$ and $ZZ \to ll + E_T^{miss}$ channels
大质量共振态粒子衰变至$ZZ \to 4l$及$ZZ \to ll + E_T^{miss}$末态分析负责人

March 2020 - October 2024 | **Contact Person** for combination and summary analysis of ATLAS dark matter searches interpreted in a 2HDM with a pseudo-scalar mediator model.
基于2HDM+a暗物质模型的新物理寻找分析负责人

November 2021 - July 2022 | **Contact Person** for ATLAS Higgs coupling and interaction combined measurements. This corresponding work has been published on July 4th 2022 in Nature, 607, 52–59, 2022.
希格斯玻色子相互作用联合测量分析负责人，工作发表于Nature, 607, 52–59, 2022

August 2020 - March 2022 | **Contact Person** for searching for the invisible Higgs decay and dark matter in the $Z \to ll + E_T^{miss}$ final state.
伴随缺失横向动量以及轻子衰变的Z玻色子末态分析负责人

Research Experience 研究经历

ATLAS Experiment, Physics Analysis 物理分析

Analyses as the Contact Person (作为分析负责人领导的物理分析)

2020 - 2024 | **Dark Matter 2HDM+a Summary with Run 2 Data**: The 2HDM+a model is a pivotal benchmark model in the LHC Dark Matter search programs. As the lead analyzer and the contact person, I proposed and implemented novel analysis techniques in signal emulation and stat-analysis. **The results significantly tighten constraints on 2HDM+a. This work was published in Sci. Bull. 69, 3005–3035, 2024 (IF 20.6 as of 2023 - 2024).**
基于2HDM+a暗物质模型的新物理寻找分析，ATLAS上首次将包括暗物质粒子的末态，以及标准模型粒子末态进行统计联合分析，为LHC暗物质基准模型提供了综合且强有力的实验约束，成果发表于Sci. Bull. 69, 3005–3035, 2024，建立了ATLAS合作组和国内综合性期刊的首次合作。

- Analysis contact person
- Signal MC sample production and signal grid emulation.
- Statistical analysis framework development.
- Proposed and developed a novel analysis strategy to statistically-combine signatures with and without substantial missing transverse energy together, enhancing sensitivity within a shared parameter plane.

2021 - 2022 **Higgs Coupling and Interaction Combination with Run 2 Data**: We scrutinized the interactions of Higgs boson with elementary particles through a combined measurement. The couplings and cross-sections were measured with a substantial 50%-70% improvements on precision comparing to the previous ATLAS+CMS Higgs combined measurement. I was the lead analyzer in individual channels ($H \to \gamma\gamma$ and $H \to$ invisible) and the contact person of this combined analysis. **This work was published in Nature, 607, 52–59, 2022 (IF 64.8 as of 2022). It has been cited more than 300 times and was recognized by the American Physical Society as one of the 'ten highlights of the year' in 2022.**
希格斯玻色子相互作用联合测量，将希格斯相互作用精度提升到全新水平。成果发表于Nature, 607, 52–59, 2022，并入选2022年美国物理学会公布的"年度国际物理学领域十项重大进展"。

- Analysis contact person.
- Channel orthogonality study.
- Statistical analysis framework development to enhance the efficiency and stability in managing intricate likelihood models.

2020 - 2022 **BSM searches in the $Z \to ll + E_T^{miss}$ final state with Run 2 Data**: This analysis searches for associated production of a Z boson with an invisibly decaying Higgs boson or dark matter candidates in the $Z \to ll + E_T^{miss}$ final state. With the novel analysis strategy including the implementation of machine-learning techniques, the final limit on the invisibly decay branching ratio of the Higgs boson of 0.19 represents an improvement of about 70% in comparison with the old result in this channel. **This work was published in Phys. Lett. B, 829, 137066, 2022**.
伴随缺失横向动量以及轻子衰变的Z玻色子末态分析，将希格斯玻色子不可见衰变的上限降至0.19，是目前LHC上该分析道最好的探测结果，发表于Phys. Lett. B, 829, 137066, 2022。

- Analysis contact person.
- Analysis framework development and sample production.
- Background estimation, statistical analysis and physics interpretation.
- Mentor PhD student Jing Li on using both data-driven methods and simulated events to estimate the non-resonant background ($t\bar{t}, WW$) processes.

Higgs Measurement 希格斯玻色子性质测量

2022 - 2023 **Measurement of $H \to ZZ \to 4l$ Fiducial Cross Section with Run 3 Data**: The first Inclusive Higgs production cross-section measurement with ATLAS Run 3 dataset, at a centre-of-mass energy of 13.6 TeV, **published in Eur. Phys. J. C, 84, 78, 2024.**

- Mentor PhD student Man Yuan to use data-driven methods for the estimation of the reducible background containing fake and non-isolated leptons.

2021 - 2022 **Single- and Double-Higgs Combination with Run 2 Data**: The measurement of Higgs self-coupling is the key to confirm the Higgs potential structure. This analysis for the first time derived the indirect constraint on Higgs self-coupling from the single-Higgs production and decay via NLO Electroweak corrections, providing more sensitive and less model-dependent results on Higgs self-coupling. **This work was published in Phys. Lett. B, 843, 137745, 2023.**
首个联合单希格斯和双希格斯过程测量希格斯自耦合的工作。利用对单希格斯过程进行NLO电弱修正过程中出现的希格斯自耦合顶点，间接约束希格斯自耦合，并与双希格斯过程合并以提高灵敏度。结果发表于Phys. Lett. B, 843, 137745, 2023。

- Modelling of the single-Higgs cross-section for the determination of the Higgs self-coupling (I am one author of the LHC Higgs WG report: LHCHWG-2022-002).
- Statistical analysis framework development.
- Statistical combination and parameterization studies.

2017 - 2019 **Higgs Coupling and Interaction Combination with Partial Run 2 Data**: This work is a part of my PhD thesis, delivering the combined measurements of Higgs boson production and decay with up to 80 fb^{-1} Run 2 data from ATLAS experiment, **It was published in Phys. Rev. D, 101, 012002, 2020, dilivering the 1st single-experimant observation of the VBF production mode (6.5 σ significance) and has been cited more than 600 times.**
利用LHC第二期运行部分数据的希格斯玻色子性质联合测量。博士论文工作之一。首次通过单一实验发现希格斯的矢量玻色子融合（VBF）产生过程，显著度为6.5σ，相关结果发表于Phys. Rev. D, 101, 012002, 2020，迄今被引用超过600次。

- Validation and scrutinization of input likelihood models.
- Study of systematic uncertainty correlation scheme.
- Statistical combination, parameterization and interpretation studies.

2015 - 2017 **Higgs Coupling Measurement in the Diphoton Decay Channel with Partial Run 2 Data**: This work is a part of my PhD thesis, measuring of Higgs boson properties in the diphoton decay channel with 36 fb^{-1} Run 2 data from ATLAS experiment, **It was published in Phys. Rev. D, 98, 052005, 2018, and has been cited around 400 times.**
利用双光子末态测量希格斯玻色子相互作用性质。博士论文工作之一。结果发表于Phys. Rev. D, 98, 052005, 2018，被引用约400次。

- Analysis category development for $V(\rightarrow leptons)H$ evens, including validation of the selection variables.
- Overlap studies of the $V\gamma$ and $V\gamma\gamma$ Monte Carlo simulation samples.
- Validation of the signal model and of the results of the statistical analysis.

SM Measurement 标准模型测量

2021 - Pres. **Measurement of ZZ Production in the $llvv$ Final State with Run 2 Data**: The measurement of ZZ production probes a cornerstone of the SM Electroweak theory and possible BSM physics scenarios.

- Analysis framework development and sample production.
- Mentor PhD students Chuanshun Wei and Liana Simpson on using advanced machine learning tools (DNN and XGBoost) to suppress the background events to improve the signal significance.

BSM and Dark Matter Searches 新物理及暗物质寻找

2023 - 2024 **Reinterpretation of Dark Photon Searches with Run 2 Data**: The massless dark photon is a under-explored dark sector scenario. I proposed and initialized this effort, which marks the first ATLAS analysis to statistically combine searches of SM and Heavy Higgs bosons decaying into a photon and a massless dark photon. **This effort improves the experimental sensitivity to reach the theoretical constraints, was published in JHEP, 08, 153, 2024.**

- Statistical analysis framework development.
- VBF,$H \rightarrow \gamma\gamma_d$ reinterpretation.
- Mentor undergraduate student Evan Rootness on studying systematics and performing statistical-combination on ggF, VBF, and ZH channels of the $H \rightarrow \gamma\gamma_d$ search.

2020 - 2022 | **Combination of Searches for Invisible Decays of the Higgs Boson with Run 1 + Run 2 Data**: Sufficiently light dark matter particles may be produced in decays of the Higgs boson that would appear invisible to the detector. This analysis is using the statistical combination method to maximize the sensitivity from ATLAS searches, resulting in the most stringent constraint on the invisible decay branching ratio of the Higgs boson to date. **This work was published in Phys. Lett. B, 842, 137963, 2023.**
希格斯玻色子不可见衰变的联合统计分析，将希格斯玻色子不可见衰变分支比限制在0.107。该工作是LHC上迄今最严格的希格斯玻色子不可见衰变上限，发表于Phys. Lett. B, 842, 137963, 2023。

- Analysis strategy design and input validation.
- Orthogonality checks .
- Mentor PhD student Xinmeng Ye on studying systematics and performing the statistical-combination.

ATLAS Experiment, Muon Detector 缪子探测器工作

Muon Monitored Drift Tube (MDT) Detector Calibration and Commissioning 缪子漂移管探测器刻度和运行

2020 - Pres. | **MDT Chamber Calibration**: Attaining the targeted muon momentum resolution in MDT chambers relies on the continuous and accurate calibrations. **I'm the system expert of ATLAS MDT calibration chamber, performing MDT gas quality and gas-dependent calibrations for all ATLAS MDT chambers during data-taking.**
作为系统专家负责ATLAS缪子漂移管探测器的刻度工作，为合作组提供准确的缪子重建参数。

- Hardware/software developing, maintaining and monitoring of the calibration system.
- Data processing to derive the MDT calibration constant.
- Maintenance of the database, the monitoring website and communication with the ATLAS muon and data-quality monitoring teams.

2015 - 2016 | **New MDT Chamber Commission**: I have studied the performance of newly installed MDT chambers as my qualification task in ATLAS.

- Determined the reconstruction efficiency and resolution of each chamber using the “Tag and Probe" method.

Muon small-diameter-Monitored Drift Tube (sMDT) Detector for the Phase-II Upgrade 缪子探测器研制

2021 - Pres. | **sMDT Chamber Construction**: After LHC Run3, the current MDT chambers will be upgraded by chambers with small-diameter-MDT chambers. I'm participating in the sMDT chamber R&D. **The effort was published in JINST, 18, P01041, 2023.**
开发了基于计算机视觉的缪子气体漂移管探测器部件质量检测软件。

- Contributed to the development of an computer-vision-based real-time framework, to automatically check the tube straightness, which has improved the construction efficiency more than 3 times.

Muon New Small Wheel (NSW) Detector for the Phase-I Upgrade

2019-2020 | **Small-strip Thin Gap Chamber (sTGC) Electronics Integration**: NSW is (one of) the largest ATLAS detector upgrade(s) between the LHC Run2 and Run3. I have contributed to the NSW construction.

- Contributed to the trigger cable labelling scheme.
- I was the coordinator of insulation work (Kaptonisation) on all NSW sTGC trigger cables, to minimize electronic crosstalk interference.

ATLAS Experiment, Electron and Photon Performance 电子光子性能研究

2016-2017 **Photon Isolation Study**: To understand the excess around 750 GeV in the diphoton spectrum in 2015 ATLAS dataset, I joined the task force to study photon performances in ATLAS, particularly focusing on photon isolation. **This effort has been published in Eur. Phys. J. C, 79, 205, 2019.**

- Developed a template fitting framework to extract the prompt photon distributions from data, facilitating the derivation of the photon isolation selection efficiencies and scale factors.
- Developed a sample production framework for universal photon performance studies.

Selected Publications 论文发表情况

1. ATLAS Collaboration, "Combination of searches for Higgs boson decays into a photon and a massless dark photon using pp collisions at $\sqrt{s}$= 13 TeV with the ATLAS detector," **JHEP**, vol. 08, p. 153, 2024, **[Collaboration Physics Subgroup Convener]**
2. ATLAS Collaboration, "Combination and summary of ATLAS dark matter searches interpreted in a 2HDM with a pseudo-scalar mediator using 139 fb−1 of s=13 TeV pp collision data," **Sci. Bull.**, vol. 69, no. 19, pp. 3005–3035, 2024, **[Analysis Contact, Collaboration Physics Subgroup Convener]**
3. ATLAS Collaboration, "Measurement of the $H \to \gamma\gamma$ and $H \to ZZ^* \to 4\ell$ cross-sections in pp collisions at $\sqrt{s} = 13.6$ TeV with the ATLAS detector," **Eur. Phys. J. C**, vol. 84, p. 78, 2024
4. ATLAS Collaboration, "Combination of searches for invisible decays of the Higgs boson using 139 fb−1 of proton-proton collision data at s=13 TeV collected with the ATLAS experiment," **Phys. Lett. B**, vol. 842, p. 137 963, 2023, **[Collaboration Physics Subgroup Convener]**
5. D. Amidei *et al.*, "Construction of precision sMDT detector for the ATLAS Muon Spectrometer upgrade," **JINST**, vol. 18, no. 01, P01041, 2023
6. ATLAS Collaboration, "Constraints on the Higgs boson self-coupling from single- and double-Higgs production with the ATLAS detector using pp collisions at s=13 TeV," **Phys. Lett. B**, vol. 843, p. 137 745, 2023
7. ATLAS Collaboration, "A detailed map of Higgs boson interactions by the ATLAS experiment ten years after the discovery," **Nature**, vol. 607, no. 7917, pp. 52–59, 2022, **[Analysis Contact]**
8. ATLAS Collaboration, "Search for associated production of a Z boson with an invisibly decaying Higgs boson or dark matter candidates at s=13 TeV with the ATLAS detector," **Phys. Lett. B**, vol. 829, p. 137 066, 2022, **[Analysis Contact]**
9. ATLAS Collaboration, "Combined measurements of Higgs boson production and decay using up to 80 fb^{-1} of proton-proton collision data at $\sqrt{s} = 13$ TeV collected with the ATLAS experiment," **Phys. Rev. D**, vol. 101, no. 1, p. 012 002, 2020, **[PhD Thesis]**
10. ATLAS Collaboration, "Measurement of the photon identification efficiencies with the ATLAS detector using LHC Run 2 data collected in 2015 and 2016," **Eur. Phys. J. C**, vol. 79, no. 3, p. 205, 2019
11. ATLAS Collaboration, "Measurement of the Higgs boson mass in the $H \to ZZ^* \to 4\ell$ and $H \to \gamma\gamma$ channels with $\sqrt{s} = 13$ TeV pp collisions using the ATLAS detector," **Phys. Lett. B**, vol. 784, pp. 345–366, 2018
12. ATLAS Collaboration, "Evidence for the associated production of the Higgs boson and a top quark pair with the ATLAS detector," **Phys. Rev. D**, vol. 97, no. 7, p. 072 003, 2018
13. ATLAS Collaboration, "Measurements of Higgs boson properties in the diphoton decay channel with 36 fb^{-1} of pp collision data at $\sqrt{s} = 13$ TeV with the ATLAS detector," **Phys. Rev. D**, vol. 98, p. 052 005, 2018, **[PhD Thesis]**
14. ATLAS Collaboration, "Search for new phenomena in high-mass diphoton final states using 37 fb^{-1} of proton–proton collisions collected at $\sqrt{s} = 13$ TeV with the ATLAS detector," **Phys. Lett. B**, vol. 775, pp. 105–125, 2017
15. M. Aaboud *et al.*, "Searches for heavy diboson resonances in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector," **JHEP**, vol. 09, p. 173, 2016
16. ATLAS Collaboration, "Search for resonances in diphoton events at $\sqrt{s}$=13 TeV with the ATLAS detector," **JHEP**, vol. 09, p. 001, 2016

Conference, Seminar and Workshop Talks 学术报告

Invited conference talks

May 2024 | "Light mediators searches at the ATLAS experiment", **12th Large Hadron Collider Physics "LHCP 2024**", Boston, USA

July 2022 | "Combined Higgs boson measurements at the ATLAS experiment", **41st International Conference on High Energy Physics "ICHEP 2022**", Bologna, Italy

August 2021 | "Dark Matter searches with the ATLAS Detector", **20th Lomonosov Conference on Elementary Particle Physics**, Moscow, Russia

July 2021 | "Search for Dark Matter with 2HDM+pseudoscalar model with the ATLAS detector", **Division of Particles and Fields meeting "DPF 2021**", Fermi National Accelerator Laboratory, USA

September 2019 | "Higgs boson couplings to quarks and leptons at the ATLAS experiment", **International Conference on Kaon Physics 2019**, Perugia, Italy

September 2018 | "Measurement of the properties of the SM-like Higgs boson in ATLAS and CMS", **Prospects for Charged Higgs Discovery at Colliders "Charged 18**", Uppsala, Sweden

August 2017 | "Measurement of Higgs boson production in the diphoton decay channel with the ATLAS experiment", **Division of Particles and Fields meeting "DPF 2017**", Fermi National Accelerator Laboratory, USA

Invited seminar talks

July 2024 | "Illuminating the Dark: Bridging Higgs Physics and Dark Matter at Colliders", **Physics Seminar**, Central China Normal University Physics Seminar, Wuhan, China

May 2024 | "Illuminating the Dark: Bridging Higgs Physics and Dark Matter at Colliders", **Guangming Seminar**, Sun Yat-Sen University, Shenzhen, China

January 2024 | "Illuminating the Dark: Bridging Higgs Physics and Dark Matter at Colliders", **TDLI-INPAC Joint Seminar**, Shanghai Jiao Tong University, Shanghai, China

August 2023 | "A detailed picture of Higgs boson interactions from the ATLAS experiment", **High Energy Physics Seminar**, University of Science and Technology of China, Hefei, China

August 2022 | "A detailed picture of Higgs boson interactions from the ATLAS experiment", **PKU-SJTU Collider Physics Forum for Junior Scholars**, online

Invited workshop talks

October 2024 | "Ongoing ATLAS Dark Matter Search Status", **ATLAS Exotics Working Group Workshop**, Bologna, Italy

October 2023 | "BSM Higgs for Run 3 and Beyond", **ATLAS Higgs Working Group Workshop**, Tokyo, Japan

September 2023 | "Critical review of the ATLAS common dark matter group programs", **ATLAS SUSY Working Group Workshop**, Oslo, Norway

June 2023 | "Run 3 Online Muon MDT gas monitoring system status report", **ATLAS Muon Week**, CERN, Switzerland

February 2023 | "Overview of Dark Matter searches in ATLAS (ongoing and future, with intermediate milestones at Run 3)", **ATLAS Collaboration Week**, CERN, Switzerland

September 2022 | "Dark Matter signature in Higgs and diboson searches", **ATLAS Higgs and Diboson Working Group Workshop**, Uppsala, Sweden

June 2022 | “Higgs working group status report", **ATLAS Collaboration Week "Ready for Run 3"**, CERN, Switzerland

November 2020 | “Higgs working group status report", **ATLAS Physics and Performance Week**, online

July 2020 | “Reinterpretation of BSM Higgs searches to constrain dark matter within 2HDM+a model", **ATLAS uncovered signatures + Run 3 opportunities workshop**, online

September 2020 | “Higgs and diboson interpretation in dark matter models", **ATLAS Higgs and Diboson Working Group Workshop**, online

December 2018 | “Combined measurements of Higgs boson production and decay with the ATLAS detector", **The 4th China LHC Physics Workshop**, Wuhan, China

July 2017 | “Photon track isolation scale factor study in the ATLAS experiment", **US ATLAS Physics Workshop**, Argonne National Laboratory, USA

July 2017 | “Measurement of Higgs boson production in the diphoton decay channel with the ATLAS experiment", **US ATLAS Physics Workshop**, Argonne National Laboratory, USA

Student Supervision 指导学生

2024-2025 | **Xulei Sun**, undergraduate student.
- *Search for heavy resonances decaying into a pair of Z bosons*

2024-2025 | **Evan Carpenter**, PhD student.
- *Search for heavy resonances decaying into a pair of Z bosons*
- *Electro isolation efficiency and scale factor study using run 3 dataset*

2023 | **Evan Rootness**, undergraduate student.
- *Reinterpretation and combination of ATLAS dark photon searches with ATLAS Run 2 data*

2021-2024 | **Liana Simpson**, PhD student.
- *Measurement of ZZ production in the $llvv$ final state with ATLAS Run 2 data*

2020-2024 | **Chuanshun Wei**, PhD student.
- *Search for Higgs invisible decay in the $Z \to ll + E_T^{miss}$ final state with ATLAS Run 2 data.*
- *Measurement of ZZ production in the $llvv$ final state with ATLAS Run 2 data*

2022 | **Pietro Lugato**, undergraduate student.
- *Combination and summary of ATLAS dark matter searches interpreted in a 2HDM with a pseudo-scalar mediator with ATLAS Run 2 data*

2020-2022 | **Xingmeng Ye**, PhD student.
- *Combination of Higgs boson coupling and interaction measurements by the ATLAS experiment ten years after the discovery.*
- *Combination of Single- and Double-Higgs boson production to constrain the Higgs boson self-coupling with ATLAS Run 2 data.*
- *Combination of searches for invisible decays of the Higgs boson with ATLAS Run 2 data.*

2020-2021 | **Jing Li**, PhD student.
- *Search for Higgs invisible decay in the $Z \to ll + E_T^{miss}$ final state with ATLAS Run 2 data.*

Conference and Workshop organization 会议组织

2024 | **Organizing Committee Member** for the 2024 ATLAS Exotics Working Group Workshop.

2024 | **Organizing Committee Member, Dark Photon and Low-mass Dark Matter session chair** for the 2024 LHC Dark Matter Working Group Workshop: “Roadmap of Dark Matter Models for LHC Run 3".

2023 | **Dark Matter session chair** for the 2023 ATLAS HDBS and Exotics Working Group Workshop.

2023 | **Dark Matter session chair** for the 2023 ATLAS SUSY Working Group Workshop.

Awards 奖项

2015-2017 | **National scholarship from China Scholarship Council**, China
The joint Ph.D. program with University of Michigan

2014 | **The 1st prize of iSTEP summer school (International Summer School on TeV Experimental Physics) project**, Beijing, China
Project topic: Using TMVA in the ttH(bb) search

2014 | **The 1st prize of B.S. graduate project**, Shanghai, China
Project topic: Using GEANT4 to simulate an RPC (Resistive Plate Chambers) muon detector system

Media Interview 媒体采访

July 2023 | **Invited by the ATLAS collaboration, I participated in an interview with RAZOR Science Show titled “Like chasing a shadow" - the hunt for Dark Matter at the LHC**
经ATLAS合作组推荐，王子瑞在2023年7月接受Razor science show节目专题纪录片采访，介绍LHC上的暗物质寻找工作。
The film has been released on RAZOR Science Show (link) on 27 August 2023