

Zheng, Xiong

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Education

- 2021 – now **Ph.D. Student, Institute of High Energy Physics, Nuclear & Particle Physics**
LHAASO Experiment(Large High Altitude Air Shower Observatory)
Advisor: Prof. Huihai He | Co-advisor: Assoc. Prof. Sha Wu
Main Work: Cosmic-ray electron measurement.
In the feasibility research stage (2022), I identified insufficient hadron rejection power in LHAASO-KM2A through simulations. Developed a novel method using LHAASO-WCDA to measure muonic content, enhancing rejection power of LHAASO-KM2A over 20 TeV. In the current stage (2023), optimizing discrimination cuts for LHAASO. Presented results at ICRC 2023; expecting early cosmic-ray electron spectrum results by 2024.
- 2019 – 2021 **M.Sc. Institute of High Energy Physics, Nuclear & Particle Physics**
Cosmic Ray Physics | GPA: 3.83/5.0 (M1 & D1)
Main Work: Set Lorentz violation constraint based on $1/2$ LHAASO-KM2A observation data on Ultra-High-Energy Photons.
Advisor: Prof. Huihai He
- 2015 – 2019 **B.Eng, Wuhan University of Technology, Material Science and Engineering**
Material Physics and Computational Physics | GPA: 3.9/5.0
Thesis title: *The first principle calculation on the optical property on Barium-based complex perovskite (Ba(B'B'')O₃) ceramic.*([Archived link](#))
Advisor: Prof. Wen Chen | Co-advisor: Prof. Jie Shen

Research Publications

Journal Articles






- 1 **Xiong, Zheng***, S. Wu, and L. C. He Hui Hai, “Method to measure muon content of extensive air showers with LHAASO KM2A-WCDA synergy,” *Nuclear Instruments and Methods in Physics Research Section A*, vol. 1059, p. 168 958, 2024, ISSN: 0168-9002. [DOI](#):
<https://doi.org/10.1016/j.nima.2023.168958>.
- 2 L. Chen, **Xiong, Zheng***, C. Li, S. Chen, and H. He, “Strong constraints on Lorentz violation using new γ -ray observations around PeV,” *Chinese Physics C*, vol. 45, no. 10, p. 105, 2021. [DOI](#):
<https://doi.org/10.1088/1674-1137/ac1166>.

Conference Proceedings




- 1 **Xiong, Zheng***, S. Wu, and H. H. He, “Measurement of cosmic-ray electrons with LHAASO KM2A-WCDA synergy,” PoS(ICRC2023)315, vol. CRI7-03, Nagoya, Japan, 2023. [URL](#):
<https://pos.sissa.it/444/315/pdf>.
- 2 **Xiong, Zheng***, S. Wu, and H. H. He, “Method to measure muon content of extensive air showers with LHAASO KM2A-WCDA synergy,” PoS(ICRC2023)314, vol. PCRI1-13, Nagoya, Japan, 2023. [URL](#):
<https://pos.sissa.it/444/314/pdf>.

Popular Science Writing / Translation



Articles and Blogs

- 1 **Xiong, Zheng*** and X. Q. Dong, “在校园捕捉来自宇宙的信息——2021年“国际宇宙日”活动概览(to capture the information from universe at campus - digest on 2021 cosmic day),” *Modern Physics*, vol. 34, no. 02, pp. 47–53, 2022, ISSN: 1001-0610.  DOI: 10.13405/j.cnki.xdwz.2022.02.017.
- 2 **Xiong, Zheng*** and J. Liu, “空气电离之谜(mystery of the spontaneous discharge of an electrometer),” *Modern Physics*, vol. 34, no. 03, pp. 54–58, 2022, ISSN: 1001-0610.  DOI: 10.13405/j.cnki.xdwz.2022.03.007.
- 3 ParadoX, “超越费米悖论(Beyond Fermi Paradox),” in ser. Beyond Fermi Paradox 8/16, Mar. 2021.  URL: <https://mp.weixin.qq.com/s/9EqbGyC7wJtVuMysE7N1sA>.
- 4 ParadoX, “天文学家如愿以偿得到了想要的的数据,却发现“哈勃常数危机”加剧了(Astronomers Get Their Wish, and a Cosmic Crisis Gets Worse),” in ser. IHEP Doctorial Scope 1/3, Dec. 2020.  URL: https://mp.weixin.qq.com/s/hPDKQVW60trVTOAw8Mrp_A.
- 5 ParadoX, “天文学家的备忘手册(Astronomer’s Toolbox),” in ser. Astronomer’s Toolbox, 2020.  URL: <https://mp.weixin.qq.com/s/10kYWIxJZn-FotJNb-BAA>.





Internship

- 2020.04 – 2021.11  **Institute of High Energy Physics Official Account - Intern Assistant Editor (Pseudonym: ParadoX)**
Key Contributions:
 - Managed routine operations for the Popular Science Press.
 - Authored 20 popular science articles, garnering over 70,000 reads across three columns.
 - Edited VLOGs, interviews, and lecture videos, optimizing length for audience engagement and refining subtitles.
- 2022.05 – now  **Campus Cosmic-ray Observation Collaboration (CCOC), IHEP - Intern Lecturer / Technician**
Key Contributions: (link)
 - Led lectures at CCOC Summer School (2022, 2023) enhancing students’ understanding of cosmic-ray observation.
 - Installed Detector Array at Jiangyan High School, contributing to the expansion of cosmic-ray observation into high school.
 - Volunteered during IHEP Open Day (2021-2023) and China’s National Science Popularization Day (2022), fostering public awareness and interest in cosmic-ray research.
- 2023.02 – now  **CubeVi Technology- Intern MLE.**
Main Work:
 - Stayed updated on NeRF advancements, incorporating improvements into 3D scene reconstruction strategies.
 - Efficiently trained a custom dataset from comic conventions, optimizing the balance between computational cost and quality.
 - Applied NeRF-cut model and Blender to create high-quality computer-generated (CG) scenes.
 - Integrated reconstructed models into a 3D Holographic Photo Frame for tangible applications.

LHAASO Collaboration Service




- 2020.09 – 2020.09  **Intern Technician.** Shandong University - Maintenance and verification of KM2A-ED 20 detectors.
- 2020.10 – 2020.11
- 2021.04 – 2022.05  **Intern Technician.** LHAASO Collaboration - Installed and verified over 200 KM2A-MD detectors during the 1/2 KM2A stage on-site service at the Large High Altitude Air Shower Observatory (LHAASO), located at 4410 m on Haizi Mt.

Skills



- Languages  Strong reading, writing, and speaking competencies in English, and Mandarin Chinese. Fluent in Japanese speaking and reading.
- Coding  C, C++, Python, cuda, \LaTeX , ...
- Software  CERN ROOT, CORSIKA, GEANT₄, CASTEP
- Misc.  Academic research, teaching, training, consultation, \LaTeX typesetting and publishing.

Miscellaneous Experience

Awards and Achievements

- 2016 - 2019  **WHUT Prize for Outstanding Student Performance**, Wuhan University of Technology. Top 30% of grades.
- 2021 - 2022  **Department Prize for Outstanding Student Performance**, Institute of High Energy Physics. Top 30% of grades.
- 2023  **Commendation Award for Completing Pre-dissertation degree requirements**, Institute of High Energy Physics. Top 30% of Ph.D. candidates.

Certifications

- 2018  **Certified Advanced Students Training.** Awarded by XLAB Göttinger Experimentallabor in Georg-August-Universität Göttingen.
- 2022  **Certified Data Analysis Skill.** Awarded by LHAASO Collaboration 2022 Summer School.

References

Prof. Huihai He

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