

Academic Staff Resume

Associate Professor ZHANG, Xiao Ping

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Academic Qualification:

Ph.D. in Physics (Nuclear Physics), Nanjing University, China, 2010

Bachelor in Physics (Microelectronics), Nanjing University, China, 2004

Teaching Area

University Physics

University Physics Experiment

Instructor of MUST Great Masters' Seminars

Research Area

Planetary dust and radiation environment

Planetary nuclear physics

Planetary remote sensing

Working Experience

Oct. 2018 to present: Assistant Director, State Key Laboratory of Lunar and Planetary Sciences, MUST

Aug. 2017 to present: Associate Professor, Space Science Institute, MUST

Mar. 2017 to Jun. 2017: Visiting scholar, Department of Earth, Planetary, and Space Sciences, UCLA

Jul. 2015 to Sep. 2018: Program Director, Space Science Institute, MUST

Sep. 2012 to Jul. 2017: Assistant Professor, Space Science Institute, MUST

Jul. 2010 to Aug. 2012: Post-doc Fellow, Department of Engineering Physics, Tsinghua University, China

Jan. 2011 to Jun. 2011: Visiting Scholar, Department of Physics and Astronomy, University of California, Los Angeles

Mar. 2008 to Apr. 2010: Student Assistant, Nuclear Science Division, Lawrence Berkeley National Laboratory

Academic Publications

Journal Articles (selected, total 190+ SCI papers with total citations above 5000):

(* denotes that I am the corresponding author)

39. Xu Meng, Yi Xu, Long Xiao, Yanan Dang, Peimin Zhu, Chi Pui Tang, Xiaoping Zhang, Bing Liu, Sheng Gou, Zongyu Yue, Ground-penetrating radar measurements of subsurface structures of lacustrine sediments in the Qaidam Basin (NW China): Possible implications for future in-situ radar experiments on Mars, **Icarus** 338, 113576 (2020).

38. Jialong Lai, Yi Xu, Xiaoping Zhang, Long Xiao, Qi Yan, Xu Meng, Bin Zhou, Zehua Dong, and Di Zhao, Comparison of dielectric properties and structure of lunar regolith at Chang'e-3 and Chang'e-4 landing sites revealed by ground-penetrating radar, **Geophysical Research Letters**, 46 (2019).

<https://doi.org/10.1029/2019GL084458>

37. Dawei Guo, Xiaoping Zhang*, Lianghai Xie*, Xiaojun Xu, Aoao Xu, Qi Yan, Yi Xu, and Fan Yang
Diamagnetic plasma clouds in the near lunar wake observed by ARTEMIS, **The Astrophysical Journal**
883, 12 (2019) .
36. Wu-Dong Dong, Xiaoping Zhang*, Yong Li, Chi-Long Tang, Aoao Xu, Fan Zhang, The Calibrations
for the Chang'E-2 Solar X-ray Monitor, **Solar Physics** 294, 120 (2019) .
35. Ji-ling You, Xiao-ping Zhang*, Qi-jun Zhi*, Zhong-zhou Ren, Qing-dong Wu, The contribution of first
forbidden transitions to nuclear β^- -decay half-lives, **Chinese Physics C** 43, 114104 (2019) .
34. Qi Yan, Xiaoping Zhang*, Lianghai Xie, Dawei Guo, Yong Li , Yi Xu, Zhiyong Xiao, Kaichang Di,
and Long Xiao, Weak dust activity near a geologically young surface revealed by Chang'E-3 mission,
Geophysical Research Letters 46, 9405 (2019).
33. Ji-Ling You, Qing-Dong Wu, Xiao-Ping Zhang, and Qi-Jun Zhi, β^- -decay half-lives for waiting point
nuclei around $N = 126$, **Communications in Theoretical Physics** 71, 293 (2019).
32. Yan Sun, Lu Zhang, Jinguo Liu, Xiaoping Zhang, Yan Su, Quanling Yin and Shuangxi He, Effects of
lunar dust simulant on cardiac function and fibrosis in rats, **Toxicology Research** 8, 499 (2019). (Cover
image paper)
31. Yan Sun, Jinguo Liu, Xiaoping Zhang, Xiongyao Li, Baichu Zhou, Zengjing Lv, Mechanisms involved
in inflammatory pulmonary fibrosis induced by lunar dust simulant in rats, **Environmental Toxicology** 34,
131 (2019). (Cover image paper)
30. Fan Yang, Yi Xu, Kwing Lam Chan, Xiaoping Zhang, Guoping Hu, and Yong Li, Study of Chang'E-2
Microwave Radiometer Data in the Lunar Polar Region, **Advances in Astronomy**, Article ID 3940837
(2019).
29. Junliang Chen, Sujun Yun, Tiekuang Dong, Zhongzhou Ren, and Xiaoping Zhang, Validation of
Geant4 physics models for nuclear beams in extended media, **Nuclear Inst. and Methods in Physics
Research B** 434, 113 (2018).
28. Yan Sun, Jinguo Liu, Yidi Kong, Jiasen Hu and Xiaoping Zhang, Effects of lunar soil simulant on
systemic oxidative stress and immune response in acute rat lung injury, **International Journal of
Pharmacology** 14, 766 (2018).
27. Jialong Lai, Yi Xu, Xiaoping Zhang, Zesheng Tang, Lunar regolith stratigraphy analysis based on the
simulation of lunar penetrating radar signals, **Advances in Space Research** 60, 2099 (2017).
26. L. Adamczyk et al. (STAR Collaboration), Global Λ hyperon polarization in nuclear collisions:
evidence for the most vortical fluid, **Nature** 548, 62 (2017).
25. Lianghai Xie, Xiaoping Zhang*, Yongchun Zheng, and Dawei Guo, The effects of spacecraft charging
and outgassing on the LADEE ion measurements, **Journal of Geophysical Research: Space Physics**
122, 5825 (2017).

24. Yong Li, Xiaoping Zhang*, Wudong Dong, Zhongzhou Ren, Tiekuang Dong, and Aoao Xu, Simulation of the production rates of cosmogenic nuclides on the Moon based on Geant4, **Journal of Geophysical Research: Space Physics** 122, 1473 (2017).
23. Lianghai Xie, Xiaoping Zhang*, Yongchun Zheng, and Dawei Guo, Solar wind-generated current in the Lunar Dust Experiment, **Geophysical Research Letters** 43, 3662 (2016).
22. Wu-Dong Dong, Xiao-Ping Zhang*, Meng-Hua Zhu, Ao-Ao Xu and Ze-Sheng Tang, Global Mg/Si and Al/Si distributions on the lunar surface derived from Chang'E-2 X-ray Spectrometer, **Research in Astronomy and Astrophysics** 16, 4 (2016).
21. L. Adamczyk et al. (STAR Collaboration), Probing parton dynamics of QCD matter with Ω and ϕ production, **Physical Review C** 93, 021903(R) (2016). (I am the corresponding author)
20. L. Adamczyk et al. (STAR Collaboration), Centrality and transverse momentum dependence of elliptic flow of multistrange hadrons and ϕ meson in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV, **Physical Review Letters** 116, 062301 (2016).
19. Chi Pui Tang, Kuan Vai Tam, Shi Jie Xiong, Jie Cao, and Xiaoping Zhang*, The structure and electronic properties of hexagonal Fe₂Si, **AIP Advances** 6, 065317 (2016).
18. Jialong Lai, Yi Xu, Xiaoping Zhang, Zesheng Tang, Structural analysis of lunar subsurface with Chang'E-3 lunar penetrating radar, **Planetary and Space Science** 120, 96 (2016).
17. Long Xiao, Peimin Zhu, Guangyou Fang, Zhiyong Xiao, Yongliao Zou, Jiannan Zhao, Na Zhao, Yuefeng Yuan, Le Qiao, Xiaoping Zhang, Hao Zhang, Jiang Wang, Jun Huang, Qian Huang, Qi He, Bin Zhou, Yicai Ji, Qunying Zhang, Shaoxiang Shen, Yuxi Li, Yunze Gao, A young multilayered terrane of the northern Mare Imbrium revealed by Chang'E-3 mission, **Science** 347, 1226 (2015).
16. L. Adamczyk et al. (STAR Collaboration), Measurement of interaction between antiprotons, **Nature** 527, 345 (2015).
15. Y. Djerboua, Xiaoping Zhang*, N. Amrani*, A. Boucenna, Zhongzhou Ren, Systematical law of (n, γ) reaction cross sections of odd-A nuclei, **Nuclear Physics A** 938, 14 (2015).
14. Xiaoping Zhang (for the STAR Collaboration), Beam energy dependence of strange hadron production from STAR at RHIC, **Nuclear Physics A** 904, 543c (2013).
13. L. Adamczyk et al. (STAR Collaboration), Observation of an energy-dependent difference in elliptic flow between particles and antiparticles in relativistic heavy ion collisions. **Physical Review Letters** 110, 142301 (2013). (I am one of the principal authors)
12. L. Adamczyk et al. (STAR Collaboration), Elliptic flow of identified hadrons in Au+Au collisions at $\sqrt{s_{NN}} = 7.7 - 62.4$ GeV, **Physical Review C** 88, 014902 (2013). (I am one of the principal authors)
11. Xiaoping Zhang, Guangwu Li, Zhongzhou Ren, Qiang Zheng, Xianglei Zhu, and Jianping Cheng, Systematical law of (n, γ) reaction cross sections of even-even nuclei, **Chinese Physics C** 36, 210

(2012).

10. Xiaoping Zhang, Jinhui Chen, Zhongzhou Ren, N. Xu, Zhangbu Xu, Qiang Zheng, and Xianglei Zhu, Effect of final state interactions on particle production in d + Au collisions at energies available at the BNL Relativistic Heavy Ion Collider. **Physical Review C** 84, 031901(R) (2011).

9. X. J. Liu, X. P. Zhang*, D. D. Ni, and Z. Z. Ren, Benford's law and cross-sections of $A(n, \alpha)B$ reactions, **The European Physical Journal A** 47, 78 (2011).

8. H. Agakishiev et al. (STAR Collaboration), Observation of the antimatter helium-4 nucleus. **Nature** 475, 412 (2011).

7. B. I. Abelev et al. (STAR Collaboration), Observation of an antimatter hypernucleus. **Science** 328, 58 (2010).

6. Qiang Zheng, Wen-ge Wang, Xiaoping Zhang, and Zhongzhou Ren, Relatively-long time decay of Loschmidt echo of a Bose-Einstein Condensate in a doublewell potential, **The European Physical Journal D** 58, 275 (2010).

5. Qiang Zheng, Wen-ge Wang, Pinquan Qin, Ping Wang, Xiaoping Zhang, and Zhongzhou Ren, Decay of Loschmidt echo in a Bose-Einstein condensate at a dynamical phase transition, **Physical Review E** 80, 016214 (2009).

4. Xiaoping Zhang, Zhongzhou Ren, Qijun Zhi, and Qiang Zheng, Systematics of β^- -decay half-lives of nuclei far from β -stable line, **Journal of Physics G: Nuclear and Particle Physics** 34, 2611 (2007).

3. Xiaoping Zhang, Zhongzhou Ren, and Qijun Zhi, Simple formula of β^+ -decay half-lives of nuclei far from β -stable line, **Communications in Theoretical Physics** 48, 1072 (2007).

2. Xiaoping Zhang and Zhongzhou Ren, New exponential law of β^+ -decay half-lives of nuclei far from β -stable line, **Physical Review C** 73, 014305 (2006).

1. Xiaoping Zhang and Zhongzhou Ren, α -decay half-lives of ground and isomeric states calculated in a unified theoretical framework, **Journal of Physics G: Nuclear and Particle Physics** 31, 959 (2005).

Research Projects

8. Scientific Analysis of Chang'E-4 Lunar Exploration Data (PI), MOP 2,906,970, supported by the Science and Technology Development Fund (FDCT) of Macau (2019-2022)

7. Theoretic study on some key nuclear reactions and its applications in the research of Mars radiation environment (PI), MOP 2,108,260, supported by Joint Program of National Natural Science Foundation of China and the Science and Technology Development Fund (FDCT) of Macau (2017-2020)

6. Analysis system of superfine particles on planets (including Moon) (Space dust analysis system) (Co-PI), MOP 5,369,820, supported by the Science and Technology Development Fund (FDCT) of Macau (2015-2016)

5. Research on the scientific and engineering questions about lunar dust (PI), MOP 3,306,500, supported

by the Science and Technology Development Fund (FDCT) of Macau (2014-2017)

4. Theoretical studies on production rate of cosmogenic nuclei in lunar surface, meteorites, and the earth's atmosphere (Co-PI), MOP 439,000, supported by the Science and Technology Development Fund (FDCT) of Macau (2012-2014)

3. Probing QCD phase diagram with ϕ meson production in STAR beam energy scan program (PI), CNY 280,000, supported by National Natural Science Foundation of China (2011-2014)

2. Analysis of strange hadron production in STAR beam energy scan program (PI), CNY 50,000, supported by Chinese Postdoctoral Science Foundation (first class) (2010-2012)

1. Probing QCD phase diagram with ϕ meson production in STAR beam energy scan program (PI), CNY 60,000, supported by the Fundamental Science Research Foundation from Department of Engineering Physics, Tsinghua University (2010-2012)

Professional Certification and Awards

Scientific Discoveries through Analysis of Multi-band Data from the Chang'E Lunar Exploration Program, Macau Natural Science Award 2016 (First Prize)

Professional Society Membership

1. Member of Planetary Physics Committee of Chinese Geophysical Society
2. Member of Chang'E-3 and Chang'E-4 Scientific Data Research and Application Core Team
3. Member of STAR Collaboration at RHIC (Relativistic Heavy Ion Collider)