

([../index.htm](#))

[首页 \(../index.htm\)](#) > [人员 \(../ry/jsfc/gk.htm\)](#) > [教师 \(../ry/jsfc/gk.htm\)](#) > [按专业分类](#)

([../ry/jsfc/azyfl.htm](#))

## 粒子物理核物理天体物理

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**教育背景:**

1995.9-2001.2 理学博士, 粒子物理与核物理, 中科院近代物理所

1991.9-1995.7 学士学位, 物理学, 北京师范大学物理系

**工作经历:**

2017.8-今 清华大学物理系 教授

2009-今 清华大学物理系 博士生导师

2012.12 -2017.07 清华大学物理系 副教授

2007.11 -2012.12: 清华大学物理系 T.T. 助理教授

2006.12 -2007.11: 海德堡大学物理研究所 Research Fellow

2004.09 -2006.11: 中科院近代物理研究所 副研究员

2002.07 -2004.12: 德国重离子研究中心 访问学者

2001.04 -2002.06: 中科院近代物理研究所 助理研究员

**教学**

承担如下本科生课程的教学

核与粒子物理 (至今)

基础物理实验A1~A3 (至今)

大学物理实验 (至2010年)

大学物理 (至2009年)

**研究领域**

原子核物理

实验核物理

\*重离子核反应动力学实验和唯象研究

\*飞米尺度下的动态成像技术

\*核物质状态方程实验测量

\*先进探测器的研发和探测技术研究

研究领域简介:

原子核是一个神奇的、相对论性的量子多体系统，中子和质子被迄今尚未完全认识的强相互作用束缚在线度约为10飞米的空间之内。利用核反应的手段，对这样的一个体系实施一点微扰、进行加热或压缩、或者改变其中子质子数目的比分，都会产生各种各样的新现象和新效应。相应地，依赖上述手段而提取到的原子核静态与激发态性质，或者核物质的热力学属性，对人们深入理解强相互作用的基本性质、宇宙中致密星体的静态与演化属性，都具有深远影响。

核物理(包括粒子物理)历经一个多世纪的发展，其实验方法自成体系。核物理实验本质上是对一次次微观随机事件的观测和重构。一般而言，这类实验的直接测量对象是一个个从随机的核核碰撞中飞行出来的微观粒子。然而，对单个粒子进行测量和鉴别、进而重构整个核反应过程并非易事，现代核物理实验需要借助先进的加速器、精细的探测器、强大的电子学线路以及海量数据获取和分析技术才能得以完成。

我们小组的研究兴趣，简言之，就在于精确重构核反应过程、提取原子核或者核物质的性质以及为推动实验发展而从事的先进探测器研发工作。详情请见：<http://info.phys.tsinghua.edu.cn/enpg> (<http://info.phys.tsinghua.edu.cn/enpg>)

奖励、荣誉和学术兼职

2019年 吴有训物理奖

2018年 广西科学技术(自然科学类)二等奖

2013年 清华大学学术新人奖

2010年 教育部新世纪优秀人才

2001年 中科院院长奖学金

主要论著

40 Fenhai Guan, Yijie Wang, Xinyue Diao, Yuhao Qin, Zhi Qin, Dong Guo, Qianghua Wu, Dawei Si, Sheng Xiao, Yaopeng Zhang, Xuan Zhao, Zhigang Xiao\*

Track Recognition of DE-E Telescopes with Silicon Strip Detectors

Nuclear Inst. and Methods in Physics Research, A 1029, 166461 (2022)

39 Yijie Wang, Fenhai Guan ... Zhigang Xiao\*

The emission order of hydrogen isotopes via correlation functions in 30 MeV/u Ar+Au reactions

Physics Letters B 825,136856 (2022)

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Rapidity distributions of Z=1isotopes and the nuclear symmetry energy from Sn+Sn collisions with radioactive beams at 270MeV/nucleon

Physics Letters B 822, 136681(2021)

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Double strangeness [1]cascade production as a probe of nuclear equation of state at high densities

Physics Letters B 820, 136521 (2021)

36. J. Estee et al., for SpRIT collaboration and M. D. Cozma

Probing the Symmetry Energy with the Spectral Pion Ratio

Physical Review Letters 126, 162701 (2021)

35. Krzysztof Pomorski\*, José M. Blanco, Pavel V. Kostyukov, Artur Dobrowolski, Boena Nerlo-Pomorska, Michal Ward, Zhi-Gang Xiao\*, Yong-Jing Chen, Li-Le Liu, Jun-Long Tian, Xin-Yue Diao, Qiang-Hua Wu

Fission fragment mass yields of Th to Rf even-even nuclei\*

Chinese Physics C 45, 054109 (2021)

34. Fenhai Guan\*, Xinyue Diao, Yijie Wang, Yuhao Qin, Zhi Qin, Qianghua Wu, Dong Guo, Xianglun Wei, Herun Yang, Peng Ma, Rongjiang Hu, Limin Duan, Wenbo Liu, Wanqing Su, Chun-Wang Ma, Yikai Hou, Zhigang Xiao\*

A Compact Spectrometer for Heavy Ion Experiments in the Fermi energy regime

Nuclear Inst. and Methods in Physics Research, A 1011 (2021) 165592

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Observing the polarization of cosmic-ray muons in student physics laboratory

Eur. J. Phys. 42 (2021) 035603

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CSHINE for studies of HBT correlation in heavy ion reactions

Nucl. Sci. Tech. 32, 4 (2021)

31. G. Jhang et al. for SpiRIT collaboration and TEMP collaboration,

Symmetry energy Investigation with pion production from Sn+Sn systems

Physics Letter B 813, 136016 (2021)

30. Qianghua Wu, Fenhai Guan, Xinyue Diao, Yijie Wang, Yingxun Zhang, Zhuxia Li, Xizhen Wu, Artur Dobrowolski, Krzysztof Pomorski, Zhigang Xiao\*

Symmetry energy effect on emissions of light particles in coincidence with fast fission

Physics Letter B 811, 135865 (2020)

29. Li Ou(欧立), Zhi-Gang Xiao(肖志刚)\*

Orientation dichroism effect of proton scattering on deformed

Chinese Physics C 44, 114103 (2020)

28. Xiao Liang, Li Ou\*, and Zhigang Xiao\*

New probe to study the symmetry energy at low nuclear density with the deuteron breakup reaction

Phys. Rev. C 101, 024603 (2020)

27. S. J. Zhu (朱胜江)\*, E. H. Wang\*, J. H. Hamilton\*, A. V. Ramayya, Y. X. Liu (刘艳鑫), N. T. Brewer, Y. X. Luo, J. O. Rasmussen, Z. G. Xiao (肖志刚), Y. Huang (黄彦), G. M. Ter-Akopian, and Ts. Oganessian

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Physical Review Letters 124, 032501 (2020)

26. Qianghua Wu, Xinyue Diao, Fenhai Guan, Yijie Wang, Yingxun Zhang, Zhuxia Li, Xizhen Wu, Krzysztof Pomorski, ZhigangXiao\*

Transport model studies on the fast fission of the target-like fragments in heavy ion collisions

Physics Letter B 797,134808 (2019)

25. Wei Ji, Yao Chen, Changbo Fu, Ming Ding, Jiancheng Fang, Zhigang Xiao, Kai Wei, and Haiyang Yan

New Experimental Limits on Exotic Spin-Spin-Velocity-Dependent Interactions By Using  $\text{SmCo}_5$  Spin Sources

Physical Review Letters 121, 261803 (2018)

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Globe  $\Lambda$  hyperon polarization in nuclear collisions

Nature 548, 62-65 (2017) [doi:10.1038/nature23004]

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Long-time drift of the isospin degree of freedom in heavy ion collisions

Physical Review C-Rapid Communication. 95, 041602R. (2017)

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Physical Review C 93, 064315 (2016).

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Physical Review C 91, 054314 (2015).

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Nature 527,345 (2015), doi:10.1038/nature15724

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Probing nuclear symmetry energy at high densities using pion, kaon, eta and photon productions in heavy-ion collisions

European Physical Journal A, 50 (2014) 37.

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Feasibility studies on the burnup measurement of fuel pebbles with HPGe gamma spectrometer

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A practical method to determine the spatial resolution of GEM detector

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11. W.Reisdorf et al.(FOPI Collaboration)

Systematics of azimuthal asymmetries in heavy ion collisions in the 1A GeV regime ,

Nuclear Physics A, 876(2012),1-60

10. The STAR Collaboration

Observation of the antimatter helium-4 nucleus

Nature 473, Pages: 353–356 (2011)

9. Zhang Ming, Z.G. Xiao\*, Shengjiang Zhu

Tracing isospin with the pi-/pi+ratio in central heavy ion collisions

Physical Review C 82, (2010)044602

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Systematics of central heavy ion collisions in the 1A GeV regime

Nuclear Physics A 848 (2010) 366–427

7. Zhang Ming, Zhigang Xiao\*, Shengjiang Zhu

Systematic studies of the  $\pi^-/\pi^+$  ratio with the same neutron/proton ratio but different masses

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6. Zhigang Xiao, Bao-An Li\*, Lie-Wen Chen, Gao-Chan Yong, Ming Zhang

Circumstantial Evidence for a Soft Nuclear Symmetry Energy at Suprasaturation Densities

Physical Review Letters 102 (2009) 062502

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Measurement of the In-Medium  $K^0$  Inclusive Cross Section in  $\pi$ -Induced Reactions at 1.15 GeV/c

Physical Review Letters 102 (2009), 182501

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Radial flow and its correlation to nuclear stopping in relativistic heavy ion collisions

Physics Letters B 666 (2008) 359

3. Z. G. Xiao\* , R. J. Hu, H. Y. Wu, G. M. Jin, Z. Y. Li, L. M. Duan, H. W. Wang, B. G. Zhang, S. F. Wang, Z. Y. Wei, H. S. Xu, Y. T. Zhu, S. L. Li, F. Fu, X. H. Yuan, Z. Q. Feng

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Physics Letters B 639 (2006) 436

2. W. Reisdorf et al. (FOPI Collaboration)

Nuclear Stopping from 0.09A to 1.93A GeV and Its Correlation to Flow

Physical Review Letters 92 (2004), 232301-1

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Evidence of “slow” relaxation of isospin degree of freedom

Physics Letters B 538 (2002) 39

