原子核物理评论 第 37 卷 第 3 期
YUANZIHE WULI PINGLUN 2020 年 9 月（总第 147 期）

目 次

第十七届全国核物理大会 (CNPC2019) 专刊

大会邀请报告

重离子碰撞中同位旋自由度输运和对称能约束 …… 肖志刚 (249)
阈效应和奇特强子态信号 (英文) …… 赵强 (260)
天体物理、引力波及重离子碰撞中的物质 (英文) ……
…… Anton Motornenko，Matthias Hanauske，Lukas Weih，Jan Steinheimer，Horst Stöcker (272)
锦屏深地核天体物理实验 (JUNA) 地面实验进展 …… 柳卫平，李志宏，何建军，唐晓东，连钢，郭冰，苏俊，李云居，崔保群，孙良亭，武启，安竹，谌阳平，陈治钧，杜先超，符长波，甘林，贺国珠，Alexander Heger，侯素青，黄翰雄，黄宁，江历阳，Shigeru Kubono，李荐民，李阎昂，李涛，Maria Lugaro，罗小兵，马少波，韩治宇，李鑫悦，马田丽，梅东明，南威克，南巍，陈晨，张昊，张龙，曹富强，钱永忠，秦久昌，任杰，谭万鹏，Isao Tanihata，王鹏，王硕，王友宝，许世伟，颜胜权，曾志，于祥庆，岳骞，曾晟，张环宇，张辉，杨丽桃，张立勇，张宁涛，张奇玮，张涛，方晓，张笑鹏，张雪珍，陈云华，祁宁春，吴世勇，郭绪元，周济芳，何胜明，宁金华，岳剑锋 (283)
丰中子 Zn 核素奇特核结构讨论和展望 …… 王姝婧，白世伟，杨晓菲 (291)
HIRFL-CSR 上等时性质量测量进展 …… 邓涵宇，王猛，张玉虎，付超义，周旭，孙铭泽，邢元明，张敏 (301)
核数据研究及应用的进展与展望 …… 葛智刚，陈永静 (309)
相对论重离子碰撞中的软探针和硬探针 (英文) …… 秦广友 (317)
强相互作用系统的对称性及其破缺 …… 刘玉鑫 (329)
中国先进研究堆中子科学平台发展现状及展望 …… 李天富，武梅梅，焦学胜，孙凯，陈东风 (364)
利用超强激光进行深度狄拉克态的可行性研究 (英文) …… 符长波，张笑鹏，戴德昌 (377)
原子核 Gamow-Teller 共振和 β 衰变寿命的超越平均场描述 …… 牛一斐 (382)
高能核物理实验国际合作研究近期代表性成果 …… 张晓明，周代翠 (391)

“胡济民教育科学奖”获奖报告

三角奇点与 *XYZ* 类粲偶素结构 (英文) …… 郭奉坤 (406)
强磁场与涡旋场中的夸克胶子物质 …… 黄旭光 (414)
利用直接核反应研究轻丰中子核的奇特结构 …… 李根，谭智威，楼建玲，蒋颖，叶沿林 (426)
不稳定原子核 β 衰变强度的实验测量方法 …… 张寂潮，孙保华 (438)
一些近期发现的同核异能态的壳模型解释 (英文) …… 袁岑溪，刘梦兰，葛育霖 (447)
缺中子 Np 新核素的 α 衰变研究 …… 张志远，甘再国，杨华彬，马龙，黄明辉，杨春莉，张明明 (455)
托卡马克高约束模边缘等离子体不稳定性研究 …… 钟武律，段旭如 (462)
通过基矢光前量子化方法研究 K 介子 …… 付开宇，赵恒飞，蓝江山，赵行波 (470)

分会报告

核结构

基于相对论Hartree-Fock理论的原子核壳结构性质研究 …… 刘佳，李佳杰，耿晶，龙文辉 (478)
*sd*壳层极丰质子核的β延迟衰变谱学 …… 林承键，徐新星，
孙立杰，贾会明，杨磊，王东玺，马南茹，杨峰，钟福鹏，潘敏，温培威，姚永进，钟善豪，骆天鹏，(RIBLL合作组) (492)
山东大学(威海)开展的核物理研究 …… 王守宇，亓斌，王硕，高建华，刘晨，张乃波，韩星池 (500)
基于壳模型对力加四极力研究*sd*和*pf*壳偶偶原子核(英文) …… 贺冶秋，傅冠健 (509)
适用于配对近似计算的集体对凝聚组态变分方法 …… 覃珍珍，雷杨 (516)
随机相互作用下基态零自旋几率的两体矩阵元相关性 …… 沈佳杰 (523)
^{130}Ba中的集体运动 …… 郭松，周厚兵，Petrache C.M，强赟华 (530)
N=127同中子素^{219}U和^{216}Ac的α衰变研究 …… 张明明，甘再国，张志远，杨华彬，黄明辉，马龙，杨春莉 (536)
^{101}Pd的能级结构研究以及与其邻近核素的系统性对比(英文) ……
…… Aman Rohilla，李广顺，王建国，柳敏良，周小红，郭松，强赟华，丁兵，侯东升，黄山 (542)
丰中子核^{63,65,67}Mn的在束γ谱学研究 ……
…… 卢洪洋，刘小雨，丁兵，刘忠，P. Doornenba，A.Obertelli，S. M. Lenzi， P. M. Walker，L. X. Chung，
B. D. Linh，G. Authelet，H. Baba，D. Calvet，F. Château， A. Corsi，A. Delbart，J. M. Gheller，A. Gillibert，T. Isobe，
V. Lapoux，M. Matsushita， S. Momiyama，T. Motobayashi，M. Niikura，F. Nowacki，H. Otsu，C. Péron， A. Peyaud，
E. C. Pollacco，J. Y. Roussé，H. Sakurai，M. Sasano，Y. Shiga， S. Takeuchi，R. Taniuchi，T. Uesaka，H. Wang，K. Yoneda (548)
利用改进的Gamow-like模型研究原子核的α衰变和质子放射性 …… 程俊皓，陈玖龙，邓军刚，李小华 (554)
双幻核^{16}O附近核素^{14}C, ^{14,15}N, $^{14-18}$O能谱结构的壳模型计算分析 …… 姜俊基，金蕊，王韩奎 (563)
^{248}Cf中K^{π}=2^{-}带的研究(英文) …… 邱远，孙扬，高早春 (569)
复动量表象方法对奇特核中晕现象的研究 …… 戴华名，曹雪能，刘泉，郭建友 (574)
AMD中*Gogny*核子-核子相互作用势对原子核基态性质的影响 ……
…… 王金成，张苏雅拉吐，黄美容，Roy Wada，郑华，王德鑫，宋娜，唐鑫，立立 (580)

核反应

基于耦合道Gamow壳模型计算^{17}O和^{17}F的能谱以及^{16}O(p,p)反应的微分散射截面(英文) …… Nicolas Michel (586)
光学势灵敏区域的能量相依性研究(英文) …… 杨磊，林承键，贾会明，王东玺，杨峰，钟福鹏，钟善豪，马南茹，温培威 (595)
重核的断前粒子发射与鞍点后摩擦的探测 …… 王宁，叶巍 (600)
应用光核反应计算μ原子中的核极化效应 …… 计晨 (605)
放射性核素寿命计算方法的模拟研究 …… 曾奇，王宁，王猛，张玉虎，涂小林，
徐星，陈瑞九，陈相成，付超义，刘君豪，李宏福，司敏，帅鹏，孙铭泽，邢元明，颜鑫亮，赵剑锟，周旭，周小红 (611)
利用GEANT4研究轻带电粒子诱发反应出射中子双微分产额 ……
…… 张鑫，陈志强，刘丙岩，韩瑞，田国玉，石福栋，孙慧 (617)
对能对弹核碎裂反应截面的影响 …… 程锦霞，张东海，李俊生 (621)

核天体物理

特洛伊木马方法及其应用最新进展 …… 李成波，文群刚 (626)
用于核天体物理实验的活性靶时间投影室 …… 张志超，张宁涛，鲁辰桂，蒲天磊，张金龙，陈涵，段利敏，
高丙水，李阔昂，李宇田，千奕，茹龙辉，唐晓东，王新雨，徐晓栋，赵红赟，蔡紫葳，姬彬斐，李奇特，许金艳，林炜平 (636)
s-/r-过程及0$\nu\beta\beta$能区锗同位素链中子俘获截面高精度测量方案 …… 安振东，郭琛琛 (643)

中高能核物理

自旋与手征动力学的输运模拟研究 …… 徐骏 (650)

$\sqrt{s_{\rm NN}}=5\sim12$ GeV能区 ^{197}Au $+^{197}$Au碰撞中正反质子椭圆流劈裂的研究 …… 李鹏程，王永佳，李庆峰，张鸿飞 (660)

RHIC-STAR重离子碰撞实验中可鉴别粒子的集体流研究 …… 施梳苏 (668)

利用格点量子色动力学研究手征平滑过渡温度和手征相变温度(英文) …… 李胜泰，丁亨通 (674)

理想磁流体力学中的相对论性Kelvin圈积分定理(英文) …… 王健飞，浦实 (679)

相对论重离子对撞机上重味衰变电子的测量数据中粲和底成分的分离(英文) …… 司 凡，陈小龙，张生辉，张一飞 (684)

动力学部分子模型在核子和冷核物质中的应用(英文) …… 王荣 (690)

τ轻子衰变及其应用(英文) …… 戴连荣 (698)

PNJL模型下手征相变的临界指数(英文) …… 高雪艳，贺伟博，邵国运 (705)

Polyakov-loop拓展的夸克介子模型中的Roberge-Weiss相变研究 …… 张啟玥，张昭 (713)

深度学习在核物理中的应用 …… 庞龙刚，周凯，王新年 (720)

探测器和电子学及应用技术

中国极化电子离子对撞机探测器设计 …… 祁康辉，梁羽铁，王荣，谢亚平，杨智，赵宇翔 (727)

ALICE实验内径迹系统探测器升级 ……

张彪，张李昂，邓文静，刘军，张文靖，柳东海，谭亚蕾，王亚平，孙向明，殷中宝，周代翠，黄光明，许怒 (734)

HIRFL-CSR外靶装置上的放射性束实验数据分析方法研究(英文) …… 孙亚洲，赵亦轩，

金树亚，王世陶，孙志宇，章学恒，闫铎，唐述文，马朋，余玉洪，岳珂，段利敏，杨贺润，鲁辰桂，方芳，苏弘 (742)

基于SiPM读出的塑料闪烁体探测器时间性能研究 ……

周冰倩，章学恒，方芳，闫铎，唐述文，余玉洪，王世陶，张永杰，刘相满，赵亦轩，金树亚，刘忠，孙志宇 (749)

基于SiPM双端读出的γ射线探测器研究 …… 刘相满，

唐述文，刘伍丰，孙志宇，余玉洪，王伟，陈若富，陈俊岭，张永杰，方芳，闫铎，王世陶，章学恒，陆建伟，周冰倩 (757)

CEE-TPC中GEM读出探测器传输性能实验研究 ……

…… 魏向伦，鲁辰桂，张俊伟，马朋，杨贺润，邱天力，李蒙，胡荣江，段利敏 (765)

Gamma全吸收型BaF_2探测装置中子屏蔽体与吸收体的研究 …… 张奇玮，栾广源，贺国珠，程品晶，阮锡超，朱兴华 (771)

TMSR白光中子源本底屏蔽设计 … 王小鹤，胡继峰，刘龙祥，王宏伟，蔡翔舟，陈金根，王纳秀，姜炳，郭子安，韩建龙 (777)

小型加速器质谱系统研制及分析技术研究 ……

…… 何明，包轶文，苏胜勇，游曲波，李康宁，赵庆章，庞仪俊，胡畔，张文慧，龚杰，何洪钰，胡跃明 (784)

用多元统计分析研究黄冶窑白瓷的原料特征 …… 赵维娟，高田，王东艳，孙新民，郭木森，张斌 (791)

高保真物理-热工耦合计算方法研究及应用 …… 刘宙宇，曹良志 (797)

低温硫化制备ZnS薄膜的物理性质研究 …… 杨光，张仁刚，陈书真，柯进林，曹兴忠，张鹏，于润升，王宝义 (804)

期刊基本参数: CN62−1131/O4 * 1984 * q * A4 * 560 * zh * P * ¥50.00 * 750 * 69 * 2020−09 * n

Nuclear Physics Review

Vol. 37, No.3 (Series No. 147) September, 2020

Contents

Special Issue of the 17th Conference on Nuclear Physics in China(CNPC2019)

Invited Plenary Presentations

Transport of Isospin Degree of Freedom in Heavy Ion Reactions and the Constraint of Symmetry Energy ····· *XIAO Zhigang* (249)

Threshold Phenomena and Signals for Exotic Hadrons ····· *ZHAO Qiang* (260)

MAGIC: Matter in Astrophysics, Gravitational Waves, and Ion Collisions ····· *Anton Motornenko, Matthias Hanauske, Lukas Weih, Jan Steinheimer, Horst Stöcker* (272)

Progress of the Ground Experiments of Jinping Underground Nuclear Astrophysics Experiment ····· *LIU Weiping, LI Zhihong, HE Jianjun, TANG Xiaodong, LIAN Gang, GUO Bing, SU Jun, LI Yunju, CUI Baoqun, SUN Liangting, WU Qi, AN Zhu, CHEN Yangping, CHEN Zhijun, DU Xianchao, FU Changbo, GAN Lin, HE Guozhu, Alexander Heger, HOU Suqing, HUANG Hanxiong, HUANG Ning, JIANG Liyang, Shigeru Kubono, LI Jianmin, LI Kuoang, LI Tao, Maria Lugaro, LUO Xiaobing, MA Shaobo, MEI Dongming, NAN Weike, NAN Wei, CHEN Chen, ZHANG Hao, HAN Zhiyu, LI Xinyue, MA Tianli, ZHANG Long, CAO Fuqiang, QIAN Yongzhong, QIN Jiuchang, REN Jie, TAN Wanpeng, Isao Tanihata, WANG Peng, WANG Shuo, WANG Youbao, XU Shiwei, YAN Shengquan, ZENG Zhi, YU Xiangqing, YUE Qian, ZENG Sheng, ZHANG Huanyu, ZHANG Hui, YANG Litao, ZHANG Liyong, ZHANG Ningtao, ZHANG Qiwei, ZHANG Tao, FANG Xiao, ZHANG Xiaopeng, ZHANG Xuezhen, CHEN Yunhua, QI Ningchun, WU Shiyong, GUO Xuyuan, ZHOU Jifang, HE Shengming, NING Jinhua, YUE Jianfeng* (283)

Exotic Nuclear Structure of Neutron-rich Zn Isotopes ····· *WANG Shujing, BAI Shiwei, YANG Xiaofei* (291)

Progress of Isochronous Mass Spectrometry at HIRFL-CSR ····· *DENG Hanyu, WANG Meng, ZHANG Yuhu, FU Chaoyi, ZHOU Xu, SUN Mingze, XING Yuanming, ZHANG Min* (301)

Progress and Prospects of Nuclear Data Research and Its Application ····· *GE Zhigang, CHEN Yongjing* (309)

Soft and Hard Probes of Relativistic Heavy-Ion Collisions ····· *QIN Guangyou* (317)

Symmetries and Their Breaking of Strong Interaction System ····· *LIU Yuxin* (329)

Current Status and Future Prospect of Neutron Facilities at China Advanced Research Reactor ····· *LI Tianfu, WU Meimei, JIAO Xuesheng, SUN Kai, CHEN Dongfeng* (364)

Feasibility Study on the Deep Dirac Levels with High-Intensity Lasers ····· *FU Changbo, ZHANG Xiaopeng, DAI Dechang* (377)

Beyond Mean-field Description of Nuclear Gamow-Teller Resonance and β-decay Half-lives ····· *NIU Yifei* (382)

Experimental Overview of Recent Research Highlights on International Cooperation in High-energy Nuclear Physics ····· *ZHANG Xiaoming, ZHOU Daicui* (391)

Reports from the Winners of the "Hu Jimin Award of Education and Science"

Triangle Singularities and Charmonium-like *XYZ* States ····· *GUO Fengkun* (406)

Quark Gluon Matter in Strong Magnetic and Vortical Fields ····· *HUANG Xuguang* (414)

Study on Exotic Structure of Light Neutron-rich Nuclei via Direct Reaction ··· *LI Gen, TAN Zhiwei, LOU Jianling, JIANG Ying, YE Yanlin* (426)

Experimental Measurement Method of Beta Decay Strength of Unstable Nuclei ····· *ZHANG Jichao, SUN Baohua* (438)

Shell-Model Explanation on Some Newly Discovered Isomers ····· *YUAN Cenxi, LIU Menglan, GE Yulin* (447)

α Decay Studies on New Neutron-deficient Np Isotopes ····· *ZHANG Zhiyuan, GAN Zaiguo, YANG Huabin, MA Long, HUANG Minghui, YANG Chunli, ZHANG Mingming* (455)

Investigation of Edge Plasma Instabilities in High Confinement Plasmas of Tokamak ····· *ZHONG Wulyu, DUAN Xuru* (462)

A Study of the Kaon from the Basis Light-Front Quantization Approach ··· *FU Kaiyu, ZHAO Hengfei, LAN Jiangshan, ZHAO Xingbo* (470)

Parallel Session Presentations

Nuclear structure

Nuclear Shell Structure Properties Described by Relativistic Hartree-Fock Theory ··· *LIU Jia, LI Jiajie, GENG Jing, LONG Wenhui* (478)

β-delayed Decay Spectroscopies of Extremely Proton-rich Nuclei in *sd*-shell ····· *LIN Chengjian, XU Xinxing, SUN Lijie, JIA Huiming, YANG Lei, WANG Dongxi, MA Nanru, YANG Feng, ZHONG Fupeng, PAN Min, WEN Peiwei, YAO Yongjin, ZHONG Shanhao, LUO Tianpeng, (RIBLL Collaboration)* (492)

The Nuclear Physics Research of Shandong University at Weihai ····· *WANG Shouyu, QI Bin, WANG Shuo, GAO Jianhua, LIU Chen, ZHANG Naibo, HAN Xingchi* (500)

Shell Model Study of Even-even *sd* and *pf* Shell Nuclei With the Pairing Plus Quadrupole-quadrupole Interaction ····· *HE Yeqiu, FU Guanjian* (509)

Variational Approach for Pair Determination in Nucleon Pair Approximation ····· *QIN Zhenzhen, LEI Yang* (516)

Correlation Between the Probability of Spin-zero Ground State and TBME in the Presence of Random Interactions ····· *SHEN Jiajie* (523)

Collective Motion in ^{130}Ba ····· *GUO Song, ZHOU Houbing, Petrache C.M, QIANG Yunhua* (530)

α-decay Studies of the N=127 Isotones ^{219}U and ^{216}Ac ····· *ZHANG Mingming, GAN Zaiguo, ZHANG Zhiyuan, YANG Huabin, HUANG Minghui, MA Long, YANG Chunli* (536)

Structural Investigation in ^{101}Pd and Comparison in Its Vicinity ····· *Aman Rohilla, LI Guangshun, WANG Jianguo, LIU Minliang, ZHOU Xiaohong, GUO Song, QIANG Yunhua, DING Bing, HOU Dongsheng, HUANG Shan* (542)

In-beam γ Spectroscopy of Neutron-rich ^{63,65,67}Mn ····· *LU Hongyang, LIU Xiaoyu, DING Bing, LIU Zhong, P. Doornenbal, A. Obertelli, S. M. Lenzi, P. M. Walker, L. X. Chung, B. D. Linh, G. Authelet, H. Baba, D. Calvet, F. Château, A. Corsi, A. Delbart, J. M. Gheller, A. Gillibert, T. Isobe, V. Lapoux, M. Matsushita, S. Momiyama, T. Motobayashi, M. Niikura, F. Nowacki, H. Otsu, C. Péron, A. Peyaud, E. C. Pollacco, J. Y. Roussé, H. Sakurai, M. Sasano, Y. Shiga, S. Takeuchi, R. Taniuchi, T. Uesaka, H. Wang, K. Yoneda* (548)

Study of α Decay and Proton Radioactivity Half-lives Based on Improved Gamow-like Model ····· *CHENG Junhao, CHEN Jiulong, DENG Jungang, LI Xiaohua* (554)

Spectral Structure Analysis of Nuclei ^{14}C, ^{14,15}N, and $^{14-18}$O Near Double Magic Nucleus ^{16}O by Shell Model Calculations ····· *JIANG Junji, JIN Rui, WANG Hankui* (563)

Investigation of K^{π}=2$^-$ Band in ^{248}Cf ····· *QIU Yuan, SUN Yang, GAO Zaochun* (569)

Study on Halo Phenomenon in Exotic Nuclei by Complex Momentum Representation Method ····· *DAI Huaming, CAO Xueneng, LIU Quan, GUO Jianyou* (574)

The Influence of *Gogny* Nucleon-nucleon Interaction Potentials of AMD on Ground State Properties of Nuclei ····· *WANG Jincheng, ZHANG Suyalatu, HUANG Meirong, Roy Wada, ZHENG Hua, WANG Dexin, SONG Na, TANG Xin, LI Li* (580)

Nuclear reaction

Calculations of the ^{17}O and ^{17}F Spectra and ^{16}O(p,p) Reaction Cross Sections in the Coupled-channel Gamow Shell Model ····· *Nicolas Michel* (586)

Energy Dependence of the Radial Sensitivity ····· *YANG Lei, LIN Chengjian, JIA Huiming, WANG Dongxi, YANG Feng, ZHONG Fupeng, ZHONG Shanhao, MA Nanru, WEN Peiwei* (595)

Prescission Particle Emission of Heavy Nuclei and the Probe of Postsaddle Friction ····· *WANG Ning, YE Wei* (600)

Application of Photonuclear Reaction to Evaluating Nuclear Polarizability in Muonic Atoms ····· *JI Chen* (605)

Simulation Study of Lifetime Calculation Methods for Radioactive Nuclides ····· *ZENG Qi, WANG Ning, WANG Meng, ZHANG Yuhu, TU Xiaolin, XU Xing, CHEN Ruijiu, CHEN Xiangcheng, FU Chaoyi, LIU Junhao, LI Hongfu, SI Min, SHUAI Peng, SUN Mingze, XING Yuanming, YAN Xinliang, ZHAO Jiankun, ZHOU Xu, ZHOU Xiaohong* (611)

Geant4 Simulations of Neutron Production Double Differential Yields in Light Charged Particle Induced Reaction ····· *ZHANG Xin, CHEN Zhiqiang, LIU Bingyan, HAN Rui, TIAN Guoyu, SHI Fudong, SUN Hui* (617)

Effect of Pairing Energy for Projectile Fragmentation Cross Sections ····· *CHENG Jinxia, ZHANG Donghai, LI Junsheng* (621)

Nuclear astrophysics

Recent Progress of the Trojan Horse Method and Its Application ····· *LI Chengbo, WEN Qungang* (626)

Active Target Time Projection Chamber (TPC) for Nuclear Astrophysics Experiments ····· *ZHANG Zhichao, ZHANG Ningtao, LU Chengui, PU Tianlei, ZHANG Jinlong, CHEN Han, DUAN Limin, GAO Binshui, LI Kuoang, LI Yutian, QIAN Yi, RU Longhui, TANG Xiaodong, WANG Xinyu, XU Xiaodong, ZHAO Hongyun, CAI Ziwei, JI Binfei, LI Qite, XU Jinyan, LIN Weiping* (636)

Precision Measurement Proposal of Neutron Capture Reaction in Ge Isotopes for s-/r-process and Neutrino-less Double-beta Decay Within Its Relevant Energy Range ····· *AN Zhendong, GUO Chenchen* (643)

Intermediate and high energy nuclear physics

Studies on Spin and Chiral Dynamics with Transport Simulations ····· *XU Jun* (650)

Investigation of the Splitting in Elliptic Flow Between Protons and Anti-protons in ^{197}Au+^{197}Au Collisions at $\sqrt{s_{\rm NN}}=5\sim12$ GeV ····· *LI Pengcheng, WANG Yongjia, LI Qingfeng, ZHANG Hongfei* (660)

Collective Flow of Identified Particles in Heavy Ion Collisions at RHIC-STAR ····· *SHI Shusu* (668)

Chiral Crossover and Chiral Phase Transition Temperatures from Lattice QCD ····· *LI Shengtai, DING Hengtong* (674)

Relativistic Kelvin Circulation Theorem for Ideal Magnetohydrodynamics ····· *WANG Jianfei, PU Shi* (679)

Charm and Beauty Separation from Heavy Flavor Electron Measurements at RHIC ····· *SI Fan, CHEN Xiaolong, ZHANG Shenghui, ZHANG Yifei* (684)

Application of the Dynamical Parton Model in Nucleon and Cold Nuclear Matter ····· *WANG Rong* (690)

τ Lepton Decays and Applications ····· *DAI Lianrong* (698)

Critical Exponents of the Chiral Phase Transition in the PNJL Model ····· *GAO Xueyan, HE Weibo, SHAO Guoyun* (705)

Roberge-Weiss Transition in the Polyakov-loop Extended Quark-meson Model ····· *ZHANG Qiyue, ZHANG Zhao* (713)

Deep Learning for Nuclear Physics ····· *PANG Longgang, ZHOU Kai, WANG Xinnian* (720)

Detector, electronics and application technology

Detector Design of the Polarized Electron Ion Collider in China ····· *QI Kanghui, LIANG Yutie, WANG Rong, XIE Yaping, YANG Zhi, ZHAO Yuxiang* (727)

Inner Tracking System Upgrade for the ALICE Experiment ····· *ZHANG Biao, ZHANG Li-ang, DENG Wenjing, LIU Jun, ZHANG Wenjing, LIU Donghai, TAN Yalei, WANG Yaping, SUN Xiangming, YIN Zhongbao, ZHOU Daicui, HUANG Guangming, XU Nu* (734)

Data Analysis Framework for Radioactive Ion Beam Experiments at the External Target Facility of HIRFL-CSR ····· *SUN Yazhou, ZHAO Yixuan, JIN Shuya, WANG Shitao, SUN Zhiyu, ZHANG Xueheng, YAN Duo, TANG Shuwen, MA Peng, YU Yuhong, YUE Ke, DUAN Limin, YANG Herun, LU Chengui, FANG Fang, SU Hong* (742)

Time Performance Study of Plastic Scintillator Detector with SiPM Readouts ····· *ZHOU Bingqian, ZHANG Xueheng, FANG Fang, YAN Duo, TANG Shuweng, YU Yuhong, WANG Shitao, ZHANG Yongjie, LIU Xiangman, ZHAO Yixuan, JIN Shuya, LIU Zhong, SUN Zhiyu* (749)

Study of the γ-Ray Detector of Dual-ended Readout Based on SiPM ····· *LIU Xiangman, TANG Shuwen, LIU Wufeng, SUN Zhiyu, YU Yuhong, WANG Wei, CHEN Ruofu, CHEN Junling, ZHANG Yongjie, FANG Fang, YAN Duo, WANG Shitao, ZHANG Xueheng, LU Jianwei, ZHOU Bingqian* (757)

Experimental Research on Transmission Performance of GEM Readout Detector in CEE-TPC ····· *WEI Xianglun, LU Chengui, ZHANG Junwei, MA Peng, YANG Herun, QIU Tianli, LI Meng, HU Rongjiang, DUAN Limin* (765)

Study of Neutron Shield and Absorber for Gamma Total Absorption Facility ····· *ZHANG Qiwei, LUAN Guangyuan, HE Guozhu, CHEN Pinjin, RUAN Xichao, ZHU Xinghua* (771)

Background Shielding Design for TMSR Photoneutron Source ····· *WANG Xiaohe, HU Jifeng, LIU Longxiang, WANG Hongwei, CAI Xiangzhou, CHEN Jingen, WANG Naxiu, JIANG Bing, GUO Zian, HAN Jianlong* (777)

Development the Miniaturized AMS System and Its Analysis Technique ····· *HE Ming, BAO Yiwen, SU Shengyong, YOU Qubo, LI Kangning, ZHAO Qingzhang, PANG Yijun, HU Pan, ZHANG Wenhui, GONG Jie, HE Hongyu, HU Yueming* (784)

Raw Material Characteristics of the White Porcelain from Huangye Kiln by Multivariable Statistics Analysis ····· *ZHAO Weijuan, GAO Tian, WANG Dongyan, SUN Xinmin, GUO Musen, ZHANG Bin* (791)

High-fidelity Neutronics and Thermal Hydraulics Coupling Method and Its Application ····· *LIU Zhouyu, CAO Liangzhi* (797)

Physical Properties of ZnS Thin Films Prepared by Low-temperature Sulfidation ····· *YANG Guang, ZHANG Rengang, CHEN Shuzhen, KE Jinlin, CAO Xingzhong, ZHANG Peng, YU Runsheng, WANG Baoyi* (804)