

目 次

核物理

- 质子滴线外奇异原子核的衰变研究 金瑜, 倪磊, 华辉, 李智焕, 牛晨阳, 吴鸿毅 (327)
丰质子核 ^{29}S 的 β 延迟 γ 衰变研究
..... 查思贤, 李金海, 覃淑炼, 常志芳, 徐新星, 孙立杰, 刘嘉健, 袁岑溪, 林承键, 李晓菁, 李智焕,
吴鸿毅, 李朋杰, 王建松, 杨彦云, 梁鹏飞, 简豪, 高雨枫, 范锐, 戴凡超, 朱浩钒, 王东玺, 蓝乙华, 马朋,
段芳芳, 高志浩, 胡强, 白真, 马军兵, 王建国, 钟福鹏, 武晨光, 罗迪雯, 蒋颖, 刘洋, 侯东升, 李忍, 马南茹,
马维虎, 石国柱, 余功明, D. Patel, 金树亚, 王煜峰, 余悦超, 胡力元, 王翔, 臧宏亮, 赵青青, 杨磊, 温培威,
杨峰, 贾会明, 张高龙, 潘敏, 汪小雨, 孙浩瀚, 徐珊瑚, 周小红, 张玉虎, 胡正国, 王猛, 陈若富, 柳敏良, 杨维青 (341)
基于统一方法描述原子核的 alpha 衰变、结团放射性和冷裂变(英文) 黎广金, 包小军 (348)
近垒能区 $^7\text{Be} + ^{120}\text{Sn}$ 的准弹性散射研究 常昶, 杨磊, 林承键, 杨彦云,
温培威, 骆天鹏, 马军兵, 许世伟, 王康, 段芳芳, 马南茹, 贾会明, 杨峰, 黄大湖, 张明昊, 杨过, 杨贊, 莫腾欢 (356)

加速器

- 紧凑型强流重离子 CH 型漂移管直线加速器力学设计 孔启宇, 殷学军, 杜衡, 李钟汕, 李小妮, 刘政, 原有进, 夏佳文 (362)
超导直线加速器包络不稳定性模拟研究 易蔓, 刘淑会, 王志军, 褚易梦, 孙坤祥, 贾端阳 (370)
张力线磁场测量系统的平台搭建与相关测试实验研究
..... 杨颜冰, 杨文杰, 吴巍, 冯文天, 欧贤金, 李大为, 杨静, 张翔, 陈广全, 张旭, 姚庆高, 马力祯 (377)

核技术

- β 辐射伏特效应同位素电池的优化设计研究进展 郑人洲, 陆景彬, 王宇, 李潇祎, 张雪, 陈子怡, 梁磊, 刘玉敏 (385)
基于卷积神经网络的放射性源项活度反演 胡湘, 宋英明, 夏月, 张戈马, 袁微微 (401)
HIRFL-CSR 外靶实验 γ 球阵列探测器子触发判选系统设计 周显才, 李先勤, 廖顺, 张洪辉, 李震, 杨海波, 李良荣, 赵承心 (410)
NICA MPD ITS 前端数据汇总与传输原型芯片中 LVDS 收发器的设计 李力, 秦家军, 赵雷, 常泽光, 郭佳诚, 宋春晓, 安琪 (418)
用于重离子加速器束流位置测量的 JFET 低噪声高阻宽带前置放大器 李亚洁, 李志学, 邱小轩, 倪发福, 武军霞 (426)
一种低功耗快速瞬态响应的 LDO 电路 刘佳佳, 叶庆文, 杨莘 (433)

交叉学科

- 快重离子辐照引起 SiC 纤维微结构变化 龙春琼, 张丽卿, 张崇宏, 郝辰春, 邱荣, 李建洋, 张宪龙, 唐永建, 竹文坤, 黄庆 (439)
 $\text{Zn}-\text{Fe}$ 法 ^{14}C 石墨样品制备条件研究 王立, 李昭梅, 唐俊森, 石书林, 张国峰, 邱林杰, 陈定雄, 沈洪涛 (446)
温度和偏压对 4H-SiC FinFET 器件单粒子瞬态效应的影响 刘保军, 钱亮, 杨晓阔, 周平 (454)
SiC 双沟槽 MOSFET 器件的单粒子烧毁效应仿真研究
..... 彭锦秋, 张行, 吴康, 刘兴宇, 杨旭, 白晓厚, 韦峰, 姚泽恩, 王俊润, 蒋天植, 包超, 卢佳玮, 张宇 (459)

- 粒子放疗束流性能多功能快速验证软件系统 谢泽欣, 康宇杰, 刘新国, 陈卫强, 李强, 戴中颖 (466)

核能与核数据

- 基于遗传-PID 算法的 CiADS 束流强度控制研究及其 DCS 实现
..... 党世武, 黎鑫鑫, 崔文娟, 马雯静, 周德泰, 贺智勇, 尹凯, 顾锐锋, 牛海华 (472)
加速器驱动嬗变研究装置顶盖漏束的热中子等效注量率评估 郭圣森, 张璐, 李金阳, 姜韦, 戴勇, 顾龙 (478)
基于蒙特卡罗方法制作用于中子输运 SN 程序的多群截面库 杨西荣, 杨永伟, 吴翔, 房鹏, 高庆瑜, 赵泽龙, 刘杰 (485)

Nuclear Physics Review

Vol. 40, No. 3

(Series No. 159)

September, 2023

Contents

Nuclear Physics

- Decay Studies of Exotic Nuclei Beyond the Proton Dripline JIN Yu, NI Lei, HUA Hui, LI Zhihuan, NIU Chenyang, WU Hongyi (327)
β-delayed γ Decay of the Proton-rich Nucleus ^{29}S ZHA Sixian,
LI Jinhai, QIN Shulan, CHANG Zhifang, XU Xinxing, SUN Lijie, LIU Jiajian, YUAN Cenxi, LIN Chengjian, Jenny Lee, LI Zhihuan, WU Hongyi,
LI Pengjie, WANG Jiansong, YANG Yanyun, LIANG Pengfei, JIAN Hao, GAO Yuseng, FAN Rui, DAI Fanchao, ZHU Haofan, WANG Dongxi, LAM Yihua,
MA Peng, DUAN Fangfang, GAO Zhihao, HU Qiang, BAI Zhen, MA Junbing, WANG Jianguo, ZHONG Fupeng, WU Chenguang, LUO Diwen,
JIANG Ying, LIU Yang, HOU Dongsheng, LI Ren, MA Nanru, MA Weihu, SHI Guozhu, YU Gongming, Patel Dipika, JIN Shuya, WANG Yuseng,
YU Yuechao, HU Liyan, WANG Xiang, ZANG Hongliang, ZHAO Qingqing, YANG Lei, WEN Peiwei, YANG Feng, JIA Huiming, ZHANG Gaolong, PAN Min,
WANG Xiaoyu, SUN Haohan, XU Hushan, ZHOU Xiaohong, ZHANG Yuhu, HU Zhengguo, WANG Meng, CHEN Ruofu, LIU Minliang, YANG Weiqing (341)
Unified Description of the Competition Between α Decay, Cluster Radioactivity and Cold Fission LI Guangjin, BAO Xiaojun (348)
Quasielastic Scattering Study for the $^{7}\text{Be}+^{120}\text{Sn}$ System at the Energy Near the Coulomb Barrier
CHANG Chang, YANG Lei, LIN Chengjian, YANG Yanyun, WEN Peiwei, LUO Tianpeng, MA Junbing,
XU Shiwei, WANG Kang, DUAN Fangfang, MA Nanru, JIA Huiming, YANG Feng, HUANG Dahu, ZHANG Minghao, YANG Guo, YANG Yun, MO Tenghuan (356)

Accelerator

- Dynamics Design on a Compact High Intensity Heavy-ion CH-DTL
KONG Qiyu, YIN Xuejun, DU Heng, LI Zhongshan, LI Xiaoni, LIU Zheng, YUAN Youjin, XIA Jiawen (362)
Envelope Instability Analysis of Superconducting Linear Accelerators
YI Man, LIU Shuhui, WANG Zhijun, CHU Yimeng, SUN Kunxiang, JIA Duanyang (370)
Platform Construction of Single Stretched Wire Method and Related Experimental Test Research YANG Yanbing,
YANG Wenjie, WU Wei, FENG Wentian, OU Xianjin, LI Dawei, YANG Jing, ZHANG Xiang, CHEN Guangquan, ZHANG Xu, YAO Qinggao, MA Lizhen (377)

Nuclear Technology

- Research Progress on Optimization Design of Betavoltaic Batteries
ZHENG Renzhou, LU Jingbin, WANG Yu, LI Xiaoyi, ZHANG Xue, CHEN Ziyi, LIANG Lei, LIU Yumin (385)
Activity Inversion of Radioactive Source Term Based on Convolutional Neural Network
HU Xiang, SONG Yingming, XIA Yue, ZHANG Gema, YUAN Weiwei (401)
Design of γ Ball Array Detector Sub-trigger System for HIRFL-CSR External Target Experiments
ZHOU Xiancai, LI Xianqin, LIAO Shun, ZHANG Honghui, LI Zhen, YANG Haibo, LI Liangrong, ZHAO Chengxin (410)
Design of LVDS Transceiver in NICA MPD ITS Front-end Data Collection and Transfer Chip
LI Li, QIN Jiajun, ZHAO Lei, CHANG Zeguang, GUO Jiacheng, SONG Chunxiao, AN Qi (418)
A JFET Low Noise and High Impedance Wideband Preamplifier for Beam Position Measurement of Heavy Ion Accelerator
LI Yajie, LI Zhixue, QIU Xiaoxuan, NI Fafu, WU Junxia (426)
A Low Power and Strong Transient Response LDO Circuit LIU Jiajia, YE Qingwen, YANG Ping (433)

Cross Discipline

- Microstructure Changes of SiC Fibers Induced by Swift Heavy Ions LONG Chunqiong,
ZHANG Liqing, ZHANG Chonghong, HAO Chenchun, QIU Rong, LI Jianyang, ZHANG Xianlong, TANG Yongjian, ZHU Wenkun, HUANG Qing (439)
Experimental Conditions for Zn-Fe Reduction Method of ^{14}C Graphite Preparation
WANG Li, LI Zhaomei, TANG Junsen, SHI Shulin, ZHANG Guofeng, QI Linjie, CHEN Dingxiong, SHEN Hongtao (446)
Investigation of Temperature and Bias Voltage Dependence of Single Event Transient in 4H-SiC FinFET
LIU Baojun, QIAN Liang, YANG Xiaokuo, ZHOU Ping (454)
Simulation Study on Single-Event Burnout Effect in SiC DT-MOSFET PENG Jinqiu,
ZHANG Hang, WU Kang, LIU Xingyu, YANG Xu, BAI Xiaohou, WEI Zheng, YAO Zeen, WANG Junrun, JIANG Tianzhi, BAO Chao, LU Jiawei, ZHANG Yu (459)
A Software System for Versatile Rapid Verification of Beam Performance in Particle Therapy
XIE Zexin, KANG Yujie, LIU Xinguo, CHEN Weiqiang, LI Qiang, DAI Zhongying (466)

Nuclear Energy and Nuclear Data

- Study of Beam Intensity Control for CiADS Facility Based on Genetic PID Algorithm and Its Implementation in DCS Control
System DANG Shiwu, LI Xinxin, CUI Wenjuan, MA Wenjing, ZHOU Detai, HE Zhiyong, YIN Kai, GU Ruiqiang, NIU Haihua (472)
Estimation of Equivalent Thermal Neutron Fluence Rate in the Leakage Beam of China Initiative Accelerator Driven System
GUO Shengmiao, ZHANG Lu, LI Jinyang, JIANG Wei, DAI Yong, GU Long (478)
Fabrication of Multi-group Neutron Transport Cross Section Library for SN Program Based on OpenMC
YANG Xirong, YANG Yongwei, WU Xiang, FANG Peng, GAO Qingyu, ZHAO Zelong, LIU Jie (485)