









Editor-in-Chief

Ma Yu-Gang, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai, China

Advisory Board

Chen Jia-Er, Peking University, Beijing, China

Fang Shou-Xian, Institute of High Energy Physics, Chinese Academy of Sciences, China

Greenspan Ehud, University of California, Berkeley, USA

Liu Yuan-Fang, Peking University, Beijing, China

Natowitz Joe B, Texas A&M University, TX, USA

Ouyang Xiao-Ping, Northwest Institute of Nuclear Technology, China

Shen Wen-Qing, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Sheng Kang-Long, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Tang Xiao-Wei, Zhejiang University, China

Tian Jia-Fu, Tsinghua University, China **Wan Yuan-Xi,** Hefei Institute of Physical Science, Chinese Academy of Sciences, China

Wang Nai-Yan, China Institute of Atomic Energy, China

Wang Xi, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, China

Xu Hong-Jie, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Xu Nu, LBNL, Berkeley, CA, USA **Yang Fu-Jia,** Fudan University, China

Editorial Board

An Qi, University of Science and Technology of China, China An Zhu, Sichuan University, China Boland J Mark, Australia Synchrotron, Australia

Bom Henry, Society of Nuclear Medicine, Korea

Byrd John, Lawrence Berkeley National Laboratory, Berkeley, CA, USA

Cai Xiang-Zhou, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Chen Dong-Feng, China Institute of Atomic Energy, China

Corbett Jeff, Stanford Linear Accelerator Center, CA, USA

Dong Yu-Hui, Institute of High Energy Physics, Chinese Academy of Sciences, China

Fan Chun-Hai, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Fu Shen, Hospital of Shanghai, China **Gehin Jess**, Oak Ridge National Laboratory, TN, USA

Gong Jian, Chinese Academy of Engineering Physics, China

Gu Ming, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

He Jian-Hua (Vice Editor-in-Chief), Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China Hu Jun, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Huang Gang (Vice Editor-in-Chief), Shanghai Jiaotong University School of Medicine, China

Huang Huan-Zhong, University of California, Los Angeles, USA

Huang Zhi-Rong (Vice Editor-in-Chief), Stanford University, CA, USA

Inoue Tomio, Yokohama University, Japan Leng Yong-Bin, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Li Bao-An, Texas A&M University, TX, USA Li Yong-Ping (Vice Editor-in-Chief), Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China Liu Gui-Min, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Liu Ke-Xin, Peking University, China Liu Zhen-An, Institute of High Energy Physics, Chinese Academy of Sciences, China

Luo Zhi-Fu, China Institute of Atomic Energy, China

Qiu Sui-Zheng, Xi'an Jiaotong University, China

Shen Qun, Brookhaven National Laboratory, NY, USA

Tai Ren-Zhong, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Veselsky Martin, Institute of Physics, Slovakia Academy of Sciences, Slovakia Wang Dong, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China Wang Fan, Medical Isotopes Research Center, Peking University, China Wang Kan, Tsinghua University, China Wei Long, Institute of High Energy Physics, Chinese Academy of Sciences, China

Wei Shi-Qiang, University of Science and Technology of China, China Wei Yue-Zhou, Shanghai Jiaotong University, China

Wilson Dane, Oak Ridge National Laboratory, TN, USA

Wu Yi-Can, Institute of Nuclear Safety, Chinese Academy of Sciences, China Xiao Guo-Qing, Institute of Modern Physics, Chinese Academy of Sciences, China

Ye Yan-Lin, Peking University, China Zhang Hong, Institute of Modern Physics, Chinese Academy of Sciences, China Zhang Xiao-Wei, KEK, Japan Zhao Zhen-Tang, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Zhu Zhi-Yuan, Shanghai Branch, Chinese Academy of Sciences, China Zou Ya-Ming (Vice Editor-in-Chief), Fudan University, China

Aims and Scope

Nuclear Science and Techniques (NST) reports scientific findings, technical advances and important results in the fields of nuclear science and techniques. The aim of this periodical is to stimulate cross-fertilization of knowledge among scientists and engineers working in the fields of nuclear research. Scope covers the following subjects:

- Synchrotron radiation applications, beamline technology;
- Accelerator, ray technology and applications;
- Nuclear chemistry, radiochemistry, radiopharmaceuticals, nuclear medicine;
- Nuclear electronics and instrumentation;
- Nuclear physics and interdisciplinary research:
- Nuclear energy science and engineering.

Volume 30 • Issue 1 • January 2019

ISSN: 1001-8042 (Paper)

SYNCHROTRON RADIATION TECHNOLOGY AND APPLICATIONS

3 Analysis of electro-optical intensity modulator for bunch arrival-time monitor at SXFEL

J.-G. Wang · X.-Q. Liu · L. Feng · W.-Y. Zhang · X.-T. Wang · B. Liu

ACCELERATOR, RAY TECHNOLOGY AND APPLICATIONS

4 Energy loss of degrader in SC200 proton therapy facility
F. Jiang · Y.-T. Song · J.-X. Zheng · X.-H. Zeng · P.-Y. Wang · J.-S. Zhang · W.-Q. Zhang

6 Element analysis method of concealed explosive based on TNA M. Huang · J.-Y. Zhu · J. Wu · R. Li

NUCLEAR ELECTRONICS AND INSTRUMENTATION

- 5 Ultrasonic positioning system for the calibration of central detector G.-L. Zhu · J.-L. Liu · Q. Wang · M.-J. Xiao · T. Zhang
- 7 Room-temperature test system for 162.5 MHz high-power couplers
 L. Chen · S.-H. Zhang · Y.-M. Li · R.-X. Wang · T. Jiang · L. Yang · C.-L. Li · A.-D. Wu · S.-C. Huang · F. Pan · X.-M. Liu · Y. He
- 9 X-ray detection based on complementary metal-oxide-semiconductor sensors Q.-Q. Cheng · C.-W. Ma · Y.-Z. Yuan · F. Wang · F. Jin · X.-F. Liu
- 16 Simulation study of energy resolution with changing pixel size for radon monitor based on *Topmetal-II* TPC

M.-Y. Huang · H. Pei · X.-M. Sun · S.-G. Zou

NUCLEAR PHYSICS AND INTERDISCIPLINARY RESEARCH

2 Study of neutron production and moderation for sulfur neutron capture therapy

M. Peng · G.-Z. He · Q.-W. Zhang · B. Shi · H.-Q. Tang · Z.-Y. Zhou

8 Cross-section measurement of (n,2n) reactions for Nd isotopes induced by 14 MeV neutrons

Q. Wang · B.-J. Chen · Q. Zhang · S.-M. Cai · C.-L. Lan · K.-H. Fang

Methods for obtaining characterist γ -ray net peak count from interlaced overlap peak in HPGe γ -ray spectrometer system

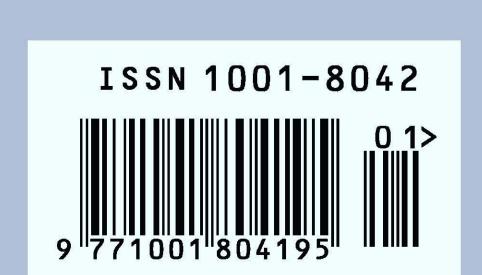
Y.-L. Song · F.-Q. Zhou · Y. Li · X.-J. Sun · P.-F. Ji

(Table of contents continued on inside back cover)









(Contents continued)

- 13 Theoretical calculation and evaluation of n + ^{240,242,244}Pu reactions H.-R. Guo · Y.-L. Han · C.-H. Cai
- 14 Nuclear collectivity in the even–even $^{164-178}$ Yb along the yrast line H.-F. Li · H.-L. Wang · M.-L. Liu
- 15 Yield ratios and directed flows of light particles from proton-rich nuclei-induced collisions

T.-Z. Yan · S. Li · Y.-N. Wang · F. Xie · T.-F. Yan

NUCLEAR ENERGY SCIENCE AND ENGINEERING

1 Avoiding sealing failure of flanged connection for tubes made of dissimilar materials subjected to elevated temperature

Q.-M. Li · C. Zhou · J. Tian · Y. Fu · Y. Zou · N.-X. Wang

10 Application of FLUKA and OpenMC in coupled physics calculation of target and subcritical reactor for ADS

Z.-L. Zhao · Y.-W. Yang · S. Hong

12 Thermal-hydraulic analysis of space nuclear reactor TOPAZ-II with modified RELAP5

C.-L. Wang · T.-C. Liu · S.-M. Tang · W.-X. Tian · S.-Z. Qiu · G.-H. Su

17 Integrity control of an RBMK-1500 fuel rod locally oxidized under a bounding reactivity-initiated accident

H. Boucherit · A. Kaliatka · A. Lounis

18 Development of a dynamics model for graphite-moderated channel-type molten salt reactor

L. He · C.-G. Yu · R.-M. Ji · W. Guo · Y. Dai · X.-Z. Cai

Volume 30 • Issue 1 • January 2019

ISSN: 1001-8042 (Paper)

SYNCHROTRON RADIATION TECHNOLOGY AND APPLICATIONS

3 Analysis of electro-optical intensity modulator for bunch arrival-time monitor at SXFEL

J.-G. Wang · X.-Q. Liu · L. Feng · W.-Y. Zhang · X.-T. Wang · B. Liu

ACCELERATOR, RAY TECHNOLOGY AND APPLICATIONS

4 Energy loss of degrader in SC200 proton therapy facility
F. Jiang · Y.-T. Song · J.-X. Zheng · X.-H. Zeng · P.-Y. Wang · J.-S. Zhang · W.-Q. Zhang

6 Element analysis method of concealed explosive based on TNA M. Huang · J.-Y. Zhu · J. Wu · R. Li

NUCLEAR ELECTRONICS AND INSTRUMENTATION

- 5 Ultrasonic positioning system for the calibration of central detector G.-L. Zhu · J.-L. Liu · Q. Wang · M.-J. Xiao · T. Zhang
- 7 Room-temperature test system for 162.5 MHz high-power couplers
 L. Chen · S.-H. Zhang · Y.-M. Li · R.-X. Wang · T. Jiang · L. Yang · C.-L. Li · A.-D. Wu · S.-C. Huang · F. Pan · X.-M. Liu · Y. He
- 9 X-ray detection based on complementary metal-oxide-semiconductor sensors Q.-Q. Cheng · C.-W. Ma · Y.-Z. Yuan · F. Wang · F. Jin · X.-F. Liu
- 16 Simulation study of energy resolution with changing pixel size for radon monitor based on *Topmetal-II* TPC

M.-Y. Huang · H. Pei · X.-M. Sun · S.-G. Zou

NUCLEAR PHYSICS AND INTERDISCIPLINARY RESEARCH

2 Study of neutron production and moderation for sulfur neutron capture therapy

M. Peng · G.-Z. He · Q.-W. Zhang · B. Shi · H.-Q. Tang · Z.-Y. Zhou

8 Cross-section measurement of (n,2n) reactions for Nd isotopes induced by 14 MeV neutrons

Q. Wang · B.-J. Chen · Q. Zhang · S.-M. Cai · C.-L. Lan · K.-H. Fang

Methods for obtaining characterist γ-ray net peak count from interlaced overlap peak in HPGe γ-ray spectrometer system

Y.-L. Song · F.-Q. Zhou · Y. Li · X.-J. Sun · P.-F. Ji

(Table of contents continued on inside back cover)







