



The 2ND Nuclear physics School for Young Scientists

Conference Manual

ORGANIZERS

Beihang University China Institute of Atomic Energy Fudan University Lanzhou University
Institute of Modern Physics Nanjing University Peking University Tsinghua University

Aug.8-Aug.13,2022,Ruichang,Jiangxi

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1 Introduction

» Background

The second “Nuclear Physics School for Young Scientists (NUSYS 2022)” will be held from Aug 8 to Aug 13, 2022 in Ruichang city, Jiangxi province of China. It is organized by the China Institute of Atomic Energy, and co-organized by Ruichang Academe of Nuclear Physics Application and Jiangxi Province Nuclear Society.

The goal of this school is to motivate the enthusiasm of young researchers to study nuclear physics by introducing the rich variety of present on-going activities in the field of experimental and theoretical nuclear physics, especially the opportunities created by the on-going or the next-generation nuclear physics facilities in Asia.

Each student is required to present a poster related to her/his work during the summer school. The organization committee will select three students for " ANPhA Award for Young Scientists ", and three students for " NUSYS Award for Young Scientists ". Award-winners will be requested to give oral presentations at the closing ceremony.

The school will be held in a hybrid mode, the onsite form (domestic participants) and the online form (participants from abroad via ZOOM), due to COVID-19. If the condition doesn't meet the requirement of onsite form owing to COVID-19, the NUSYS 2022 will be held fully online.

The school is jointly organized by the China Institute of Atomic Energy (CIAE), Beihang University (BUAA), Fudan University (FDU), Institute of Modern Physics (IMP), Lanzhou University (LZU), Nanjing University (NJU), Peking University (PKU) and Tsinghua University (THU).

» Committee

The School Master	
Yanlin Ye (PKU)	
The Organizing Committee	
Deqing Fang (FDU)	Xiaodong Tang (IMP)
Bing Guo (CIAE)	Zhigang Xiao (THU)
Zhong Liu (IMP)	Chang Xu (NJU)
Yifei Niu (LZU)	Xiaofei Yang (PKU)
Baohua Sun (BUAA)	

» Venue



2 Research Interests of Lecturers (by the sequence of schedule)



Prof. Hiroyoshi Sakurai, Riken

Professor Sakurai explores exotic nuclear structures and dynamics in exotic nuclei with largely imbalanced proton and neutron numbers. He develops new experimental techniques utilizing fast radioactive isotope beams at RIBF, to discover new phenomena and properties in exotic nuclei.



Prof. Jie Meng, Peking University

scientists in nuclear physics with important impacts and an excellent reputation within and beyond the international nuclear physics community. Among his many achievements, the followings are worth to be mentioned, the establishment of relativistic density functional theory for novel nuclear phenomena, prediction of nuclear chiral doublet bands, prediction of nuclear multiple chiral doublet (MxD) bands, discovery of the origins of hidden pseudospin and spin symmetries, fully self-consistent the relativistic ab initio calculation, etc.



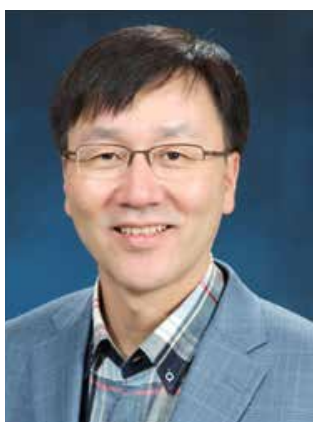
Prof. Danyang Pang, Beihang University

Prof. Pang focuses on direct nuclear reaction theory and few body nuclear reaction theory. The main research topics include few-body nuclear reaction (based on Faddeev equation), direct nuclear reaction mechanism of atomic nucleus and its nuclear structure, as well as key nuclear reactions related to nuclear astrophysics.



Dr. Sunghoon (Tony) Ahn, CENS, IBS

Dr. Ahn engages in an interdisciplinary research field of nuclear physics and astrophysics. He studies the properties of nuclei that help explain both the formation of elements in the universe, the evolution of stellar bodies and cosmic explosions. He also did many research work to reveal interesting features of the strong nuclear interaction, not usually found in stable isotopes.



Prof. Kevin Insik Hahn, CENS, IBS

Professor Hahn is an expert in the field of nuclear physics and nuclear astrophysics by utilizing rare isotope accelerators. He studies key nuclear reactions that are responsible for generating heavy elements and explosive energy in stars such as the sun and supernovae.



Prof. Chengjian Lin, China Institute of Atomic Energy

Prof. Lin is committed to the study of near Coulomb barrier heavy ion nuclear reaction mechanism, exotic nuclear structure new reaction mechanism, exotic decay mode at the proton drip line and methods of complete kinematic measurement etc. Detectors, electronics and acquisition systems are also his research interest.



Prof. Yuhu Zhang, Institute of Modern Physics, CAS

Professor Zhang engages in experimental nuclear physics study. His two main research topics are as follows, one is high spin states in nuclear structure, the other is nuclear mass measurement for the short- lived nuclei and related scientific research.



Prof. Yanlin Ye, Peking University

Prof. Ye engages in the experimental research with Radioactive Ion Beams (RIBs). He has explored new structures on the nuclear chart, such as halo and clustering, together with their reaction behaviors. New technologies have also been developed along with the physics research.



Prof. William Lynch, NSCL, Michigan State University

Professor Lynch's research is focused upon understanding nuclear collisions and how the information derived from such collisions can improve the understanding of nuclei, nuclear matter and neutron stars. He also probes the density dependence of the symmetry energy.



Prof. Yifei Niu, Lanzhou University

Professor Niu is a nuclear theorist. She devotes to studying density functional theory, nuclear collective vibrations at zero and finite temperature, nuclear weak interaction processes and applications in astrophysics. Many of her publications are about the theoretical study of nuclear collective excitation mode and the process of weak interaction.



Prof. Toshitaka Kajino, Beihang University and Tokyo University

Prof. Kajino's research topics include the following various subjects, such as big-bang cosmology, explosion mechanism of supernovae and gamma-ray bursts and nucleosynthesis of heavy elements, neutrino astrophysics and cosmology etc.



Prof. Weiping Liu: China Institute of Atomic Energy

Professor Liu's research fields include radioactive ion beam physics, nuclear reaction rates and stellar abundances, the s-process, the r-process, nuclear properties for astrophysics, underground nuclear astrophysics, large scale scientific facility etc.



Prof. Jenny Hiu Ching Lee, Hongkong University

Professor Lee is dedicated to the studies of the nuclear shell structure evolution, the nucleon correlations in nuclei and nuclear experimental techniques. The experimental techniques include direct reactions, in-beam gamma spectroscopy and beta-decay spectroscopy. She is also constructing the state-of-the-art gamma-ray detector array and charged particle detector array with her collaborators.



Prof. Hooi Jin Ong, Institute of Modern Physics, CAS

Professor Hooi Jin Ong specialized in the study of nuclei with excessive proton(s) or neutron(s). His research interest covers nuclear structure, nuclear reaction and nuclear astrophysics. He undertakes the development of state-of-the-art target systems, and radiation and nuclear detection systems necessary for nuclear-physics experiments.

3 Schedule

Monday 8 August 2022

8:00-8:20	Welcome Address & Photo	
8:20-9:20	H. Sakurai	Physics with exotic nuclei - its achievement and perspective
9:20-9:35	Coffee break	
9:35-10:35	J. Meng	Nuclear structure: FIAS (Facts, Ideas and Attempts)
10:35-10:50	Coffee break	
10:50-11:50	J. Meng	Nuclear structure: FIAS (Facts, Ideas and Attempts)
11:50-12:10	Discussion	
12:10-13:30	Lunch	
13:30-14:30	J. Meng	Nuclear structure: FIAS (Facts, Ideas and Attempts)
14:30-14:45	Coffee break	
14:45-15:45	D. Y. Pang	Direct nuclear reactions -- theoretical essentials and applications
15:45-16:00	Coffee break	
16:00-17:00	S. Ahn	Understanding nuclear reactions in the universe
17:00-17:20	Discussion	
17:20-19:00	Dinner	
19:00-21:00	Poster Setting	

Tuesday 9 August 2022

8:20-9:20	K. Hahn	Status of the RAON facility and research activities in Korea
9:20-9:35	Coffee break	
9:35-10:35	D. Y. Pang	Direct nuclear reactions -- theoretical essentials and applications
10:35-10:50	Coffee break	
10:50-11:50	D. Y. Pang	Direct nuclear reactions -- theoretical essentials and applications
11:50-12:10	Discussion	
12:10-13:30	Lunch	
13:30-14:30	C. J. Lin	Experimental progresses on nuclear reactions with exotic nuclei at energies around the coulomb barrier
14:30-14:45	Coffee break	
14:45-15:45	C. J. Lin	Experimental progresses on nuclear reactions with exotic nuclei at energies around the coulomb barrier
15:45-16:05	Discussion	
16:05-16:20	Coffee break	
16:20-17:20	Q&A J. Meng D.Y. Pang	
17:20-19:00	Dinner	
19:00-21:00	Poster session on site	

Wednesday 10 August 2022

8:20-9:20	Y. H. Zhang	Precision mass measurement for short lived nuclei
9:20-9:35	Coffee break	
9:35-10:35	C. J. Lin	Experimental progresses on nuclear reactions with exotic nuclei at energies around the coulomb barrier
10:35-10:50	Coffee break	
10:50-11:50	Y. L. Ye	Nuclear structure: the past and the possible future?
11:50-12:10	Discussion	
12:10-13:30	Lunch	
13:30-14:30	Y. L. Ye	Nuclear structure: the past and the possible future?
14:30-14:45	Coffee break	
14:45-15:45	Y. L. Ye	Nuclear structure: the past and the possible future?
15:45-16:05	Discussion	
16:05-16:20	Coffee break	
16:20-17:20	Q&A Y. L. Ye C. J. Lin	
17:20-19:00	Dinner	
19:00-21:00	Poster session on site	

Thursday 11 August 2022

8:20-9:20	W. Lynch	TBD
9:30-18:00	Excursion	
18:30-20:00	Dinner	

Friday 12 August 2022

8:20-9:20	Y.F. Niu	Neutrinoless double beta decay and its nuclear matrix element
9:20-9:35	Coffee break	
9:35-10:35	T. Kajino	Nuclear physics in explosive nucleosynthesis in the Big-Bang, supernovae and neutron star mergers
10:35-10:50	Coffee break	
10:50-11:50	T. Kajino	Nuclear physics in explosive nucleosynthesis in the Big-Bang, supernovae and neutron star mergers
11:50-12:10	Discussion	
12:10-13:30	Lunch	
13:30-14:30	T. Kajino	Nuclear physics in explosive nucleosynthesis in the Big-Bang, supernovae and neutron star mergers
14:30-14:40	Coffee break	
14:40-15:40	W. P. Liu	Lecture note on experimental nuclear astrophysics
15:40-15:50	Coffee break	
15:50-16:50	W. P. Liu	Lecture note on experimental nuclear astrophysics
16:50-17:00	Coffee break	
17:00-18:00	W. P. Liu	Lecture note on experimental nuclear astrophysics
18:00-18:20	Discussion	
18:20-19:00	Free Time	
19:00-21:00	Banquet	

Saturday 13 August 2022

8:20-9:20	Jenny Lee	Nuclear structure explored via in-beam gamma-ray spectroscopy.
9:20-9:35	Coffee break	
9:35-10:35	Hooi Jin Ong	Introduction to ion beam optics and radioisotope beam transport
10:35-10:50	Coffee break	
10:50-11:50	Hooi Jin Ong	Introduction to ion beam optics and radioisotope beam transport
11:50-12:10	J.R. Ren	$p^{11}\text{B}$ nuclear reactions initiated by laser-accelerated intense proton beam in boron plasma
12:10-13:30	Lunch	
13:30-14:30	Q&A T. Kajino W. P. Liu	
14:30-14:45	Coffee break	
14:45-17:50	Poster presentations & Awarding ceremony (W.P. Liu Y. L. Ye)	
18:00-20:00	Dinner	

4 Conference Infrastructure

» Conference APP:

ZOOM Meeting **Meeting ID:** 990 8585 2316 **Passcode:** 4012022

» Website:

<http://indico.ihep.ac.cn/event/14252>

» E-mail:

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