

CUSTIPEN: China-U.S. Theory Institute for Physics with Exotic Nuclei

Thanks to the joint efforts and built on the existing collaboration of many nuclear physicists in both China and the United States, the China-U.S. Theory Institute for Physics with Exotic Nuclei (CUSTIPEN) was officially established in May 2013 at Peking University in Beijing. The funding for CUSTIPEN is currently provided by the U.S. Department of Energy (DOE), Peking University and the Institute of Modern Physics, Chinese Academy of Science. As a center for innovative research, CUSTIPEN will provide a unique platform for Chinese and American collaborators to combine their vast pool of talent and expertise as well as cutting-edge computing resources and theoretical tools to tackle some of the most critical and complex scientific issues raised by the latest experiments conducted at the advanced rare isotope beam facilities around the world.

Nuclear theory plays an extremely important role in the study of rare isotopes. It poses scientific questions that lead to the construction and operation of new facilities, guides the research programs, and provides frameworks to understand new phenomena observed in experiments at these facilities. However, the complexity of the new problems and the challenges to effectively solve them timely requires varied expertise, theoretical tools, computing resources, and funding that are hard to find in a single country. The role of international collaborations in studying the physics of exotic nuclei has thus never been more important. Two outstanding examples are the Japan-U.S. Theory Institute for Physics with Exotic Nuclei (JUSTIPEN) and the France-U.S. counterpart FUSTIPEN. These two institutes facilitate collaboration of U.S. scientists with their Japanese and French

counterparts in the pursuit of a basic understanding of exotic nuclei and their role in astrophysics and elsewhere. CUSTIPEN was established following these successful examples. As both China and the United States continue to develop more advanced rare isotope beam capabilities and related science programs, there are unprecedentedly strong reasons for more close collaborations between the two countries in radioactive beam science. Both China and the United States have been investing heavily in experiments at their respective radioactive beam facilities that need stronger theoretical supports. Both countries are world leaders in supercomputers providing a truly unique opportunity for the most sophisticated large-scale nuclear many-body calculations necessary for a thorough understanding of exotic nuclei and reactions induced by them. As more U.S.-trained Ph.Ds



Figure 1. Participants of the CUSTIPEN opening ceremony and the CUSTIPEN Workshop on Properties of Exotic Nuclei, Neutron-Rich Nucleonic Matter and Their Astrophysical Impacts.

and postdocs are returning to China to take faculty and leadership positions at top research universities and national laboratories, while a large number of high quality Chinese graduate students and postdocs continue to go to the United States, CUSTIPEN will further enhance workforce mobility between the two countries and thus help train the next generation world-class nuclear scientists for both China and the United States. Recognizing the need and unique potential for more productive collaborations benefiting both countries, the U.S. Department of Energy (DOE) decided recently to support CUSTIPEN as one of its international collaborative programs in nuclear theory. Simultaneously, CUSTIPEN also received strong support from many institutions in China.

CUSTIPEN is located at Peking University in China. It supports both theorist–theorist and experimentalist–theorist collaborations involving faculty members, research scientists, postdocs, and students from any Chinese and American research institution. Its operation is managed by a governing board consists of the following members:

Chinese Members of the CUSTIPEN Governing Board:

- Yugang Ma (Shanghai Institute of Applied Physics)
- Zhongzhou Ren (Nanjing University)
- Furong Xu (Managing Director, Peking University)
- Yanlin Ye (Co-Director, Peking University)
- Wenlong Zhan (Chinese Academy of Science)
- Huanqiao Zhang (China Institute of Atomic Energy)
- Yuhu Zhang (Institute of Modern Physics, CAS)
- Shan-gui Zhou (Institute of Theoretical Physics, CAS)

U.S. Members of the CUSTIPEN Governing Board:

- P. Danielewicz (Co-Director, Michigan State University)
- Bao-An Li (Principal Investigator, Texas A&M University–Commerce)
- W. Nazarewicz (University of Tennessee and ORNL)

- J. Piekarewicz (Florida State University)
- B. Sherrill (Michigan State University)

The opening ceremony and CUSTIPEN's first workshop on Properties of Exotic Nuclei, Neutron-Rich Nucleonic Matter and Their Astrophysical Impacts was held in Beijing, 8–9 May 2013. As shown in Figure 1, over 60 Chinese and American nuclear physicists attended the events and discussed plans of more close collaborations in order to make good use of the opportunities provided by the CUSTIPEN. More information about CUSTIPEN can be found at <http://CUSTIPEN.PKU.EDU.CN>.

BAO-AN LI
*Texas A&M University–Commerce,
Commerce, Texas, USA*

FURONG XU
Peking University, China



Taylor & Francis
Taylor & Francis Group

www.tandfonline.com