

Assistant Professor of Physics  
University of South Dakota

414 East Clark Street  
Vermillion, SD 57069, U.S.

## Education

- **Ph.D.** Technische Universität München, Germany June 2009  
**Thesis:** Development of Segmented Germanium Detectors for  $0\nu\beta\beta$ <sup>1</sup> Experiments
- **M.S.** Peking University, China July 2005  
**Thesis:** Measurement of the branching fractions of charmonium decays to multi-pion system
- **B.E.** Beihang University, China July 2002  
**Major:** Hydrodynamics and Applied Mechanics

## Professional Experience

- University of South Dakota, SD, US Assistant professor 2014 – present  
Development of novel radiation detection technologies for dark matter and neutrino physics
- Stanford University, CA, US Visiting scientist Mar. 2011  
Development of barium-tagging systems to identify  $^{136}\text{Xe}$   $0\nu\beta\beta$ -decay events for EXO
- Lawrence-Berkeley National Lab, CA, US Visiting scientist Feb. 2011  
Feasibility study of segmented point-contact Ge detectors for light dark matter search
- Kavli IPMU<sup>2</sup>, University of Tokyo, Japan Postdoctoral researcher 2009 – 2014  
Hardware, software development & physics analysis for the XMASS dark matter experiment
- Max-Planck-Institut für Physik, Germany Research assistant Apr. – Oct., 2009  
Development of high-purity germanium detectors for  $0\nu\beta\beta$ -decay experiments
- Institute of High Energy Physics, CAS, China Research assistant 2005 – 2006  
Physics analysis in the  $\psi(2S)$  group for BEIJING Spectrometer II (BESII) experiment

## Grants Obtained

- PI (\$330,480) National Science Foundation, US 2015 – 2018  
Undoped NaI/CsI Directly Coupled to PMTs at 77 K for Rare-Event Searches
- PI (\$25,000) South Dakota Board of Regent, US 2015 – 2016  
Development of A Segmented PPC HPGe Detector for Rare-Event-Search Experiments
- PI (~\$39,000) Japan Society for the Promotion of Science, Japan 2014 – 2015  
Feasibility study of pure NaI/CsI directly coupled to PMTs at 77K for dark matter search
- Co-PI (~\$479,700) Japan Society for the Promotion of Science, Japan 2012 – 2015  
A Search for Dark Matter
- PI (~\$10,000) Japan Society for the Promotion of Science, Japan 2011  
Institutional Program for Young Researcher Overseas Visits

## Membership

- Member of MINER, a collaboration of 10 institutes from 4 countries searching for CEvNS<sup>3</sup> and beyond (sterile neutrinos, and non-standard neutrino interactions, etc.).
- Member of LEGEND, a collaboration of 44 institutes from 14 countries searching for  $0\nu\beta\beta$ -decays of  $^{76}\text{Ge}$  using high-purity Ge (HPGe) detectors.
- Member of DUNE, a collaboration of 162 institutes from 30 countries searching for CP-violations in neutrino oscillations.
- Former member of XMASS, the largest liquid xenon dark matter experiment in Japan.
- Former member of GERDA, a HPGe detector based  $0\nu\beta\beta$  experiment that holds the most stringent lower limit of the effective Majorana neutrino mass to date.

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<sup>1</sup>Neutrinoless double beta decay

<sup>2</sup>Institute for the Physics and Mathematics of the Universe

<sup>3</sup>Coherent Elastic neutrino( $\nu$ )-Nucleus Scattering

- Former member of BESII, a high energy physics detector at the Beijing Electron-Positron Collider, China, its successor, BESIII, holds the largest data set of charmonium states.

## Teaching Experience

(Student evaluation: <http://www.ratemyprofessors.com/ShowRatings.jsp?tid=2008328>)

- phys-592 Computational Methods for Physics 2016 Fall
- phys-761 Nuclear and Particle Physics 2016 Spring
- phys-332 Experimental Modern Physics 2015,2016,2017 Spring
- phys-792 Radiation Detection Technology 2015 Fall
- phys-187L Introduction to Astronomy Lab 2015 Spring

## Conference Experience

- U.S. Cosmic Visions: New Ideas in Dark Matter, 2017 Parallel talk
- Mini-Symposium:  $0\nu\beta\beta$ -Decay, APS <sup>4</sup> April Meeting, 2016 Chair
- APS Annual Meetings, US, 2014 – 2016 Parallel talks
- Workshop on Germanium-Based Detectors and Technologies, US, 2014 Parallel talk
- Int'l Conf. on Interconnections between Part. Phys. & Cosmology, US, 2013 Plenary talk
- Symposium of Sino-German Ge Detector Technique Coop., Germany, 2013 Plenary talk
- International Symposium on Neutrino Physics and Beyond, China, 2012 Plenary talk
- TAUP 2011, Munich, Germany, 2011 Parallel talk
- Symposium on Future Application of Ge Detectors, China, 2011 Plenary talk
- Japanese Physics Society Annual Meetings, 2010,2011,2013 Parallel talks
- Neutrino 2010, Athens, Greece, 2010 Poster
- TAUP 2009, Rome, Italy, 2009 Poster
- German Physics Society Annual Meetings, 2007, 2008 Parallel talks
- IDEA <sup>5</sup> (N4 <sup>6</sup> of ILIAS <sup>7</sup>) Meeting, Heidelberg, Germany, 2007 Plenary talk

## Selected Publications

(Full lists: <http://orcid.org/0000-0003-1869-2407>, [https://arxiv.org/a/liu\\_j\\_2.html](https://arxiv.org/a/liu_j_2.html))

1. **Detectability of galactic supernova neutrinos coherently scattered on xenon nuclei in XMASS**, *J. Liu* in XMASS Collab., *Astropart. Phys.*, **89**, 51–56 (2017)
2. **Light yield of an undoped CsI crystal coupled directly to a photomultiplier tube at 77 Kelvin**, *J. Liu*, M. Yamashita, A. Soma, *JINST*, **11**, P10003 (2016)
3. **Discrimination of nuclear and electronic recoil events using plasma effect in germanium detectors**, W.-Z. Wei, *J. Liu*, D.-M. Mei, *JINST*, **11**, P07008 (2016)
4. **Search for Bosonic Superweakly Interacting Massive Dark Matter Particles with the XMASS-I Detector**, *J. Liu* in XMASS Collab., *Phys. Rev. Lett.*, **113**, 121301 (2014)
5. **The Gerda experiment for the search of  $0\nu\beta\beta$ -decay in  $^{76}\text{Ge}$** , *J. Liu* in GERDA Collab., *Eur. Phys. J. C*, **73**, 2330 (2013)
6. **Pulse shape simulation for segmented true-coaxial HPGe detectors**, I. Abt, A. Caldwell, D. Lenz, *J. Liu*, X. Liu, B. Majorovits, *Eur. Phys. J. C*, **68**, 609–618 (2010).
7. **Neutron interactions as seen by a segmented germanium detector**, I. Abt, A. Caldwell, K. Kröniger, *J. Liu*, X. Liu, B. Majorovits, *Eur. Phys. J. A*, **36**, 139–149 (2008)
8. **Measurement of  $\psi(2S)$  Radiative Decays**, *J. Liu* in BES Collab., *Phys. Rev. Lett.*, **99**, 11802 (2007)

<sup>4</sup>American Physical Society

<sup>5</sup>Integrated Double beta decay European Activities

<sup>6</sup>Network 4, Search on Double Beta Decay

<sup>7</sup>Integrated Large Infrastructures for Astroparticle Science, Europe