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**Employment Experience**

2015 – Present: Research Associate, National Superconducting Cyclotron Laboratory, Michigan State University

**Education**

2010: B.Sc. in physics, Peking University, China Thesis: Nuclear Cluster Structures and Decays

2015: Ph.D. in nuclear physics, Peking University, China Thesis: Model Development for Nuclear Structures

**Research Interests**

My research work has been devoted to the developments of nuclear structure models, mainly focusing on: 1) open quantum systems; 2) cluster/molecular structures.

* **Open quantum systems**.We developed a 3-body Gamow coupled-channel (GCC) approach in Jacobi coordinates with Berggren basis, which contains bound state and continuum effects simultaneously and the center-of-mass motion automatically eliminated. In this case, those open quantum systems (weakly bound nuclei and resonances) can be well described. We benchmarked it with the Gamow shell model (GSM) and regular coupled-channel (CC) calculations by studying energies and neutron correlation of halo nucleus He-6 and other A = 6 nuclei. And we also use this new method to analyze exotic two-proton (2*p*) decay nuclei, such as 67Kr and 11,12O, near the dripline.
* **Cluster/Molecular structures**.In order to study exotic structures and spectroscopicproperties of light nuclei, we have written a code of AMD model independently. Using this model, we investigate the halo structure of 6He and molecular structures in Be isotopes. And we have also developed an orthogonality condition model (OCM) for 12C (3α) and 24Mg (16O + 2α) to analyze their triangular and chain style structures. Our another work is to study the properties of mid-heavy nuclei using phenomenological models, including decay properties with a WKB approximation and spectra with a binary cluster model*.*
* **Mean-field theory**.In order to include the continuum effect in 3D-HFB calculation, we are trying to add Thomas-Fermi approximation instead of single particle levels in the continuum.



**Publications**

1. T. B. Webb *et al*., “Particle decays of levels in 11,12N and 12O investigated with the invariant-mass method”, [Arxiv: 1906.11347 (2019).](https://arxiv.org/abs/1906.11347)
2. **S. M. Wang**, W. Nazarewicz, R. J. Charity, and L. G. Sobotka, “Structure and decay of extremely proton-rich nuclei 11,12O”,  [Physical Review C **99**, 054302 (2019).](https://journals.aps.org/prc/abstract/10.1103/PhysRevC.99.054302)
3. T. B. Webb, **S. M. Wang**, K. W. Brown, R. J. Charity, J. M. Elson *et al*., “First observation of unbound 11O, the mirror of the halo nucleus 11Li”,  [Physical Review Letters](https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.122501) **[122](https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.122501)**[, 122501 (2019).](https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.122501)
4. **S. M. Wang**, and W. Nazarewicz, “Puzzling two-proton decay of 67Kr”,  [Physical Review Letters **120**, 212502 (2018).](https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.120.212502)
5. **S. M. Wang**, N. Michel, W. Nazarewicz, and F. R. Xu, “Structure and decays of nuclear three-body system: The Gamow coupled-channel method in Jacobi coordinates”,  [Physical Review C **96**, 044307 (2017).](https://journals.aps.org/prc/abstract/10.1103/PhysRevC.96.044307)
6. F. R. Xu, **S. M. Wang**, J. C. Pei, W. J. Chen, and Z. X. Xu, “Molecular structure in light atomic nuclei”,  [Romanian Journal of Physics **60**, 829 (2015).](http://inspirehep.net/record/1384052/files/0829_0835.pdf)
7. **S. M. Wang**, J. C. Pei, and F. R. Xu, “Spectroscopic calculations of cluster nuclei abovedouble shell closures with a new local potential”,  [Physical Review C **87**, 014311 (2013)](http://link.aps.org/doi/10.1103/PhysRevC.87.014311).
8. **S. M. Wang**, C. Xu, R. J. Liotta, C. Qi, F. R. Xu, and D. X. Jiang, “Alpha-particle decaysfrom excited states in 24Mg”,  [Science China-Physics Mechanics & Astronomy **54**, S13](http://phys.scichina.com:8083/sciGe/EN/abstract/abstract504471.shtml)0  [(2011)](http://phys.scichina.com:8083/sciGe/EN/abstract/abstract504471.shtml).
9. F. R. Xu, **S. M. Wang**, Z. J. Lin and J. C. Pei, “Alpha-decay quantum-tunnelling calculations based on a folded Woods-Saxon potential”,  [Journal of Physics: Conference Series **436**](http://iopscience.iop.org/1742-6596/436/1/012064/),  [012064 (2013)](http://iopscience.iop.org/1742-6596/436/1/012064/).
10. F. R. Xu, J. C. Pei, and **S. M. Wang**, “Cluster decay calculations based on mean-field potentials”,  [Journal of Physics: Conference Series **413**, 012017 (2013)](http://iopscience.iop.org/1742-6596/413/1/012017/).
11. S. J. Zheng, **S. M. Wang**, and F. R. Xu, “Effect of odd-multipolarity deformations on fission barriers in superheavy nuclei”,  [Journal of Physics: Conference Series **381**, 012059 (2012)](http://iopscience.iop.org/1742-6596/381/1/012059/).
12. C. Xu, C. Qi, R. J. Liotta, R. Wyss, **S. M. Wang**, F. R. Xu, and D. X. Jiang, “Molecular structure of highly excited resonant states in 24Mg and the corresponding 8Be + 16O and 12C + 12C decays”,  [Physical Review C **81**, 054319 (2010)](http://prc.aps.org/abstract/PRC/v81/i5/e054319).

**Presentations**

1. Invited talk: the 24th European Conference on Few-Body Problems in Physics, Guildford, UK, Sep 2-6, 2019.
2. Invited talk: “Study of the two-proton radioactivity within the Gamow coupled-channel approach”, International workshop on many-body system with strong interaction, Lanzhou, Gansu, China, Jun 9-14, 2019.
3. Oral talk: “Study of the two-proton radioactivity within the Gamow coupled-channel approach”, The 2019 international conference on proton-emitting nuclei (PROCON2019), Lansing, MI, USA, Jun 3-7, 2019.
4. Oral talk: “Two-proton radioactivity in the Gamow coupled-channel method”, The 2019 NUCLEI collaboration meeting, Santa Fe, NM, USA, May 22-24, 2019.
5. Invited talk: “Study of the two-proton radioactivity within the Gamow coupled-channel approach”, Nuclear physics seminar, Washington University in St. Louis, MO, USA, Feb 1, 2019.
6. Invited talk: “Structure and dynamics of 2*p* decay on light and mid-heavy nuclei”, Chengdu-CUSIPEN workshop on theory of rare nuclear decays, Chengdu, Sichuan, China, May 14-19, 2018.
7. Poster: “Nuclear three-body problems with continuum effects: Gamow coupled-channel method in Jacobi coordinates”, Advances in Radioactive Isotope Science, Keystone, CO, USA, May 28-June 2, 2017.
8. Poster: “Analysis on three-body problems with Gamow coupled-channel method”, CUSTIPEN-IMP-PKU workshop, Huizhou, China, December 13, 2016.
9. Oral talk: “Analysis on exotic cluster structures by AMD approach”, Advances in the Computational Nuclear Many-Body Problem (the second workshop of CUSTIPEN), Beijing, China, December 15-17, 2013.
10. Poster: “Clustering around shell closures with a local Potential”, the 11*th* International Conference on Nucleus-Nucleus Collisions (NN2012), San Antonio, Texas, USA, May 27-June 1, 2012.
11. Oral talk: “Cluster structure in 24Mg”, the 14*th* National Conference on Nuclear Structure in China (Nuclear Structure in China 2012), Huzhou, Zhejiang, China, April 12-16, 2012.

**Awards or Honors**

2014: The Okamatsu Scholarship. 2013: Founder Scholarship.

2013: Third Prize of “Zhong Shengbiao Education Fund” Forum. 2012: National Scholarship for Graduate students.

2010: Pacemaker to Merit Student of Peking University.

2009: Third Prize of “National Fund for Undergraduate Innovation Research”. 2005: First Prize of “Chinese Physics Olympiad”.

2005: Second Prize of “National Mathematical Olympiad in Senior”.