Jin Lei, Ph.D.

Research Fellow
Tongji University
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Employment History

2020.11 – Now **Research Fellow** Tongji University

2019.11 – 2020.10 **Post-Doctoral Research Associate** INFN, Sezione di Pisa
Supervisor: Dr. Angela Bonaccorso

2016.8 –2019.8 **Post-Doctoral Research Associate** Department of Physics and Astronomy, Ohio University
Supervisor: Prof. Charlotte Elster

Education

2013.10 – 2016.7 **Ph.D., University of Seville, Spain** in Theoretical Nuclear Physics.
Supervisor: Prof. Antonio M. Moro
Thesis title: *Study of Inclusive Breakup Reactions Induced by Weakly Bound Nuclei.*
More details at https://idus.us.es/xmlui/handle/11441/44344

2010.9 – 2013.7 **M.Sc., University of Chinese Academic of Sciences, China** in Nuclear Physics
Supervisor: Prof. Jiansong Wang
Thesis title: *Reduction Method for Low-energy Nuclear Reaction Systems.*

2006.9 – 2010.7 **B.Eng., Northeastern University, China.** in Mechanical Engineering

Skills

Languages Native speaker of Chinese; strong reading, writing and speaking competencies in English.

Coding C/C++, Fortran, LaTeX

Research Publications

Journal Articles

1 Calvin W Johnson, Kristina D Launey, Naftali Auerbach, Sonia Bacca, Bruce R Barrett, Carl R Brune, Mark A Caprio, Pierre Descouvemont, W H Dickhoff, Charlotte Elster, Patrick J Fasano, Kevin Fossez, Heiko Hergert, Morten Hjorth-Jensen, Linda Hlophe, Baishan Hu, Rodolfo M Id Betan, Andrea Idini, Sebastian König, Konstantinos Kravvaris, Dean Lee, **Jin Lei**, Alexis Mercenne, Rodrigo Navarro Perez, Witold Nazarewicz, Filomena M Nunes, Marek Płoszajczak, Jimmy Rotureau, Gautam Rupak, Andrey M Shirokov, Ian Thompson, James P Vary, Alexander Volya, Furong Xu, Remco G T. Zegers, Vladimir Zelevinsky and Xilin Zhang, 'White paper: from bound states to the continuum', Journal of Physics G: Nuclear and Particle Physics **47**, 123001 (2020).

2 **Jin Lei** and Pierre Descouvemont, 'Lagrange-mesh r-matrix method for inhomogeneous equations', Phys. Rev. C **102**, 014608 (2020).

3 F.F. Duan, Y.Y. Yang, K. Wang, A.M. Moro, V. Guimarães, D.Y. Pang, J.S. Wang, Z.Y. Sun, **Jin Lei**, A. Di Pietro, X. Liu, G. Yang, J.B. Ma, P. Ma, S.W. Xu, Z. Bai, X.X. Sun, Q. Hu, J.L. Lou, X.X. Xu, H.X. Li, S.Y. Jin, H.J. Ong, Q. Liu, J.S. Yao, H.K. Qi, C.J. Lin, H.M. Jia, N.R. Ma, L.J. Sun, D.X. Wang, Y.H. Zhang, X.H. Zhou, Z.G. Hu and H.S. Xu, 'Scattering of the halo nucleus 11be from a lead target at 3.5 times the coulomb barrier energy', Physics Letters B **811**, 135942 (2020).

4 J. P. Fernández-García, A. Di Pietro, P. Figuera, J. Gómez-Camacho, M. Lattuada, **Jin Lei**, A. M. Moro, M. Rodríguez-Gallardo and V. Scuderi, 'Breakup mechanisms in the ^{6}He $+^{64}$ Zn reaction at near-barrier energies', Phys. Rev. C **99**, 054605 (2019).

5 L. Hlophe, **Jin Lei**, Ch. Elster, A. Nogga, F. M. Nunes, D. Jur čiukonis and A. Deltuva, 'Deuteron-α scattering: Separable versus nonseparable Faddeev approach', Phys. Rev. C **100**, 034609 (2019).

6 **Jin Lei** and Antonio M. Moro, 'Puzzle of Complete Fusion Suppression in Weakly Bound Nuclei: A Trojan Horse Effect?', Phys. Rev. Lett. **122**, 042503 (2019).

7 **Jin Lei** and Antonio M. Moro, 'Unraveling the Reaction Mechanisms Leading to Partial Fusion of Weakly Bound Nuclei', Phys. Rev. Lett. **123**, 232501 (2019).

8 Rodrigo Navarro Pérez and **Jin Lei**, 'Is the unusual near-threshold potential behavior in elastic scattering of weakly-bound nuclei a precision error?', Physics Letters B **795**, 200–205 (2019).

9 A. Di Pietro, A.M. Moro, **Jin Lei** and R. de Diego, 'Insights into the dynamics of breakup of the halo nucleus 11Be on a 64Zn target', Physics Letters B **798**, 134954 (2019).

10 **Jin Lei**, 'Inclusive breakup calculations in angular momentum basis: Application to ^{7}Li $+^{58}$ Ni', Phys. Rev. C **97**, 034628 (2018).

11 **Jin Lei**, L. Hlophe, Ch. Elster, A. Nogga, F. M. Nunes and D. R. Phillips, 'Few-body universality in the deuteron-α system', Phys. Rev. C **98**, 051001(R) (2018).

12 **Jin Lei** and Antonio M. Moro, 'Post-prior equivalence for transfer reactions with complex potentials', Phys. Rev. C **97**, 011601(R) (2018).

13 L. Hlophe, **Jin Lei**, Ch. Elster, A. Nogga and F. M. Nunes, '^{6}Li in a three-body model with realistic Forces: Separable versus nonseparable approach', Phys. Rev. C **96**, 064003 (2017).

14 **Jin Lei** and Antonio M. Moro, 'Comprehensive analysis of large α yields observed in ^{6}**Li**-induced reactions', Phys. Rev. C **95**, 044605 (2017).

15 G. Potel, G. Perdikakis, B. V. Carlson, M. C. Atkinson, W. H. Dickhoff, J. E. Escher, M. S. Hussein, **Jin Lei**, W. Li, A. O. Macchiavelli, A. M. Moro, F. M. Nunes, S. D. Pain and J. Rotureau, 'Toward a complete theory for predicting inclusive deuteron breakup away from stability', The European Physical Journal A **53**, 178 (2017).

16 Q. Ducasse, B. Jurado, M. Aïche, P. Marini, L. Mathieu, A. Görgen, M. Guttormsen, A. C. Larsen, T. Tornyi, J. N. Wilson, G. Barreau, G. Boutoux, S. Czajkowski, F. Giacoppo, F. Gunsing, T. W. Hagen, M. Lebois, **Jin Lei**, V. Méot, B. Morillon, A. M. Moro, T. Renstrøm, O. Roig, S. J. Rose, O. Sérot, S. Siem, I. Tsekhanovich, G. M. Tveten and M. Wiedeking, 'Investigation of the ^{238}U(d,p) surrogate reaction via the simultaneous measurement of γ-decay and fission probabilities', Phys. Rev. C **94**, 024614 (2016).

17 **Jin Lei** and Antonio M. Moro, 'Numerical assessment of post-prior equivalence for inclusive breakup reactions', Phys. Rev. C **92**, 061602(R) (2015).

18 **Jin Lei** and Antonio M. Moro, 'Reexamining closed-form formulae for inclusive breakup: Application to deuteron- and ^{6}Li-induced reactions', Phys. Rev. C **92**, 044616 (2015).

19 Y. Y. Yang, J. S. Wang, Q. Wang, D. Y. Pang, J. B. Ma, M. R. Huang, P. Ma, S. L. Jin, J. L. Han, Z. Bai, **Jin Lei**, J. B. Chen, Q. Hu, R. Wada, S. Mukherjee, Z. Y. Sun, R. F. Chen, X. Y. Zhang, Z. G. Hu, X. H. Yuan, S. W. Xu, S. Z. Chen, X. G. Lei, L. X. Liu, W. H. Ma, S. T. Wang, D. Yan, X. H. Zhang, M. H. Zhao, Y. Zhou, Y. J. Zhou, Z. Y. Guo, Y. H. Zhang, H. S. Xu and G. Q. Xiao, 'Quasi-elastic scattering of ^{10,11}C and ^{10}B from a ^{nat}Pb target', Phys. Rev. C **90**, 014606 (2014).

20 Y. Y. Yang, J. S. Wang, Q. Wang, D.Y Pang, J. B. Ma, M. R. Huang, J. L. Han, P. Ma, S. L. Jin, Z. Bai, Q. Hu, **Jin Lei**, J. B. Chen, N. Keeley, K. Rusek, R. Wada, S. Mukherjee, Z. Y. Sun, R. F. Chen, X. Y. Zhang, Z. G. Hu, X. H. Yuan, X. G. Cao, Z. G. Xu, S. W. Xu, C. Zhen, Z. Q. Chen, Z. Chen, S. Z. Chen, C. M. Du, L. M. Duan, F. Fu, B. X. Gou, J. Hu, J. J. He, X. G. Lei, S. L. Li, Y. Li, Q. Y. Lin, L. X. Liu, F. D. Shi, S. W. Tang, G. Xu, X. Xu, L. Y. Zhang, X. H. Zhang, W. Zhang, M. H. Zhao, Z. Y. Guo, Y. H. Zhang, H. S. Xu and G. Q. Xiao, 'Elastic scattering of the proton drip-line nucleus ^{8}B off a ^{nat}Pb target at 170.3 MeV', Phys. Rev. C **87**, 044613 (2013).

21 Y.Y. Yang, J.S. Wang, Q. Wang, J.B. Ma, M.R. Huang, J.L. Han, P. Ma, S.L. Jin, Z. Bai, Q. Hu, **Jin Lei**, J.B. Chen, R. Wada, Z.Y. Sun, R.F. Chen, X.Y. Zhang, Z.G. Hu, X.H. Yuan, X.G. Cao, Z.G. Xu, S.W. Xu, C. Zhen, Z.Q. Chen, Z. Chen, S.Z. Chen, C.M. Du, L.M. Duan, F. Fu, B.X. Gou, J. Hu, J.J. He, X.G. Lei, S.L. Li, Y. Li, Q.Y. Lin, L.X. Liu, F.D. Shi, S.W. Tang, G. Xu, X. Xu, L.Y. Zhang, X.H. Zhang, W. Zhang, M.H. Zhao, Y.H. Zhang and H.S. Xu, 'A method for the measurement of elastic scattering angular distribution at HIRFL-RIBLL', Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment **701**, 1–6 (2013).

22 **Jin Lei**, J. S. Wang, S. Mukherjee, Q. Wang and R. Wada, 'Phenomenological formula of total reaction cross sections for low-energy systems', Phys. Rev. C **86**, 057603 (2012).

23 **Jin Lei**, J. S. Wang, S. Mukherjee, Q. Wang, R. Wada, Y. Y. Yang, J. B. Chen, J. L. Hang, M. R. Huang, Z. Bai, P. Ma, S. L. Jin, J. B. Ma, Y. Li and M. H. Zhao, 'Quarter-point angle for light, weakly bound projectiles', Phys. Rev. C **86**, 057602 (2012).

Conference Proceedings

1 L. Hlophe, **Jin Lei**, Ch. Elster, A. Nogga and F. M. Nunes, 'Three-body approach to deuteron-alpha scattering using realistic forces in a separable or non-separable representation', Recent Progress in Few-Body Physics, edited by N. A. Orr, M. Ploszajczak, F. M. Marqués and J. Carbonell, 267–271 (2020).

2 F.M. Nunes, P.C. Capel, Ch. Elster, L. Hlophe, **Jin Lei**, Weichuan Li, A.E. Lovell, G. Potel, J. Rotureau and T. Poxon-Pearson, 'New developments in reaction theory: preparing for the frib era', EPJ Web Conf. **178**, 03001 (2018).

3 **Jin Lei** and Antonio M. Moro, 'Evaluation of inclusive breakup cross sections in reactions induced by weakly-bound nuclei within a three-body model', EPJ Web of Conferences **117**, 06016 (2016).

4 **Jin Lei** and Antonio M. Moro, 'Evaluation of Inclusive Breakup in Reactions Induced by Deuteron within a Three-Body Model', Basic Concepts in Nuclear Physics: Theory, Experiments and Applications, edited by José-Enrique García-Ramos, Clara E. Alonso, María Victoria Andrés and Francisco Pérez-Bernal, 207–208 (2016).

5 Marini, P., Ducasse, Q., Jurado, B., Aiche, M., Mathieu, L., Barreau, G., Czajkowski, S., Tsekhanovich, I., Moro, A., Lei, Jin, Giacoppo, F., Gorgen, A., Tornyi, Audouin, L., Tassan-Got, L., Wilson, J. N., Gunsing, F., Guttormsen, M., Larsen, A. C., Lebois, M., Renstrom, T., Rose, S.,

Siem, S., Tveten, G. M., Wiedeking, M., Serot, O., Boutoux, G., Méot, V., Morillon, B., Denis-Petit, D., Roig, O., Oberstedt, S. and Oberstedt, A., 'First simultaneous measurement of fission and gamma probabilities of 237u and 239np via surrogate reactions', EPJ Web of Conferences **122**, 12004 (2016).

6 P. Marini, Q. Ducasse, B. Jurado, M. Aiche, L. Mathieu, G. Barreau, S. Czajkowski, I. Tsekhanovich, A. Moro, **Jin Lei**, F. Giacoppo, A. Gorgen, Tornyi, L. Audouin, L. Tassan-Got, J. N. Wilson, F. Gunsing, M. Guttormsen, A. C. Larsen, M. Lebois, T. Renstrom, S. Rose, S. Siem, G. M. Tveten, M. Wiedeking, O. Serot, G. Boutoux, V. Méot, B. Morillon, D. Denis-Petit, O. Roig, S. Oberstedt and A. Oberstedt, 'First simultaneous measurement of fission and gamma probabilities of 237U and 239Np via surrogate reactions', EPJ Web of Conferences **122**, 12004 (2016).

7 A. M. Moro, **Jin Lei**, M. Gómez-Ramos, J. M. Arias, R. de Diego, J. Gómez-Camacho and J. A. Lay, 'Recent Developments for the Calculation of Elastic and Non-elastic Breakup of Weakly-bound Nuclei', Acta Phys. Polon. **B47**, 821 (2016).

8 Antonio M. Moro and **Jin Lei**, 'Recent Advances in Nuclear Reaction Theories for Weakly Bound Nuclei: Reexamining the Problem of Inclusive Breakup', Few-Body Systems **57**, 319–330 (2016).

9 J. S. Wang, Y. Y. Yang, Q. Wang, **Jin Lei**, J. B. Ma, M. R. Huang, J. L. Han, P. Ma, S. L. Jin, Z. Bai, Q. Hu, J. B. Chen, R. Wada, Z. Y. Sun, R. F. Chen, X. Y. Zhang, Z. G. Hu, X. H. Yuan, X. G. Cao, Z. G. Xu, S. W. Xu, C. Zhen, Z. Q. Chen, Z. Chen, S. Z. Chen, C. M. Du, L. M. Duan, F. Fu, B. X. Gou, J. Hu, J. J. He, X. G. Lei, S. L. Li, Y. Li, Q. Y. Lin, L. X. Liu, F. D. Shi, S. W. Tang, G. Xu, L. Y. Zhang, X. H. Zhang, W. Zhang, M. H. Zhao, Y. H. Zhang, H. S. Xu, G. Q. Xiao, S. Mukhejee, N. Keeley, K. Rusek and D. Y. Pang, '7Be, 8B+ 208Pb Elastic Scattering at Above-Barrier Energies', Journal of Physics: Conference Series **420**, 012075 (2013).

Teaching

2019
- Talent Course 6: Theory for exploring nuclear reaction experiments, June 3 to 21, 2019, Michigan State University, East Lansing, MI, USA
- Graduate course, Ohio University, 2019. On a few occasions, I helped Professor Charlotte Elster teach Physics 6021 : Quantum Mechanics.

Miscellaneous Experience

Professional Service

2020
- Lead Organizer: Reaction Seminar, a special online seminar series for the COVID-19 period, more details can be found at `https://reactionseminar.github.io`

Talks

Seminars

- *Inclusive breakup of 209Bi(6Li, αX) and related topics*, Reaction Seminar, Jun. 2, 2020, more details see here
- *Nuclear reactions from a three body perspective*, Beihang University, Beijing, China, Sep. 20, 2019

Talks (continued)

- *Nuclear reactions from a three body perspective*, Tsinghua University, Beijing, China, Sep. 17, 2019
- *Nuclear reactions from a three body perspective*, Peking University, Beijing, China, Sep. 11, 2019
- *Nuclear reactions in a three body model*, Ohio University, Athens, OH, USA, Feb. 13, 2019
- *Direct Nuclear Reaction in a Three-body Model*, Tongji University, Shanghai, China, Jan., 2018
- *Three-body reaction theory*, China Institute of Atomic Energy, Beijing, China, Dec., 2017
- *Three-body reaction theory in a model space*, Institute of Theoretical Physics, Chinese Academy of Sciences, Beijing, China, Dec., 2017
- *Three-body reaction theory in a model space*, Peking University, Beijing, China, Dec., 2017
- *Study of inclusive breakup reactions induced by weakly bound nuclei*, Michigan State University, East Lansing, MI, USA, Oct. 2016

Invited Talks at Workshops and Conferences

- *Nuclear reaction in a three body model: exploring the story in Q-space*, FRIB-Theory Alliance workshop:"From bound states to the continuum: Connecting bound state calculations with scattering and reaction theory.", East Lansing, MI, USA, June 11-22, 2018
- *Study of inclusive breakup reactions induced by weakly bound nuclei*, INT Workshop INT-17-1a, Seattle, USA, 2017

Contributed talks at Workshops and Conferences

- *Momentum Space Faddeev Calculation of $d + \alpha$ Scattering*, APS April, Columbus, USA, 2018
- *^{6}Li and $d + \alpha$ scattering in a three-body momentum space Faddeev model (I)*, DNP 2017, Pittsburgh, USA, 2017
- *Evaluation of inclusive breakup in reactions induced by weakly-bound nuclei within a three-body model*, NN2015, Catania, Italy, 2015
- *Quarter-point angle for light weakly bound projectiles*, The 8th China-Japan Joint Physics Symposium, Beijing, China, 2012

Posters

- *Evaluation of inclusive breakup in reactions induced by weakly-bound nuclei within a three-body model*, Basic concepts in Physics: theory, experiments and applications, La Rabida, Spain, 2015
- *Evaluation of inclusive breakup in reactions induced by weakly-bound nuclei within a three-body model*, Euroschool on Exotic Beams, Padova, Italy, 2014

References

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