Curriculum Vitae

Contact Information

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Academic Career

Duration: July 2015 – present
Position: Junior Research Scientist and Research Scientist III
Institute: Extreme Light Infrastructure - Nuclear Physics (ELI-NP), IFIN-HH, Romania

Duration: May 2014 – June 2015
Position: Postdoctoral Researcher
Institute: Nuclear Physics Institute, Academy of Sciences of Czech Republic, Czech Republic

Duration: September 2012 – April 2014
Position: Postdoctoral Research Associate
Institute: Cyclotron Institute, Texas A&M University, USA

Duration: August 2009 – August 2012
Position: Belgian National Fund for Scientific Research (F.N.R.S) Postdoctoral Researcher
Institute: Institut d'Astronomie et d'Astrophysique, Universite Libre de Bruxelles, Belgium

Duration: September 2004 – July 2009
Position: Research Assistant, Ph. D. Candidate in Particle and Nuclear Physics
Institute: Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Education

Duration: September 2004 – July 2009
Degree: Ph. D in Particle and Nuclear Physics, received in July 2009
Institute: Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

Duration: September 2000 – July 2004
Degree: B.Sc. in Applied Chemistry, received in July 2004
Institute: Department of Chemistry, Shandong University, China

Scientific Publication

[1] H.Y. Lan, **Yi Xu**, W. Luo, D.L. Balabanski, S. Goriely, M. La Cognata, C. Matei, A. Anzalone, S. Chesnevskaya, G.L. Guardo, D. Lattuada, R.G. Pizzone, S. Romano, C. Spitaleri, A. Taffara, A. Tumino, and Z.C. Zhu, Determination of the photodisintegration reaction rates involving charged particles: systematical calculations and proposed measurements based on Extreme Light Infrastructure - Nuclear Physics (ELI-NP), *Phys. Rev. C 98 (2018) 054601*.

[2] **Yi Xu**, S. Goriely, D.L. Balabanski, S. Chesnevskaya, G.L. Guardo, M. La Cognata, H.Y. Lan, D. Lattuada, W. Luo and C. Matei, Capture and photonuclear reaction rates involving charged-particles: Impacts of nuclear ingredients and future measurement on ELI-NP, *Eur. Phys. J. Web of Conference 178 (2018) 04007*.

[3] R. Lau, M. Beard, S. S. Gupta, H. Schatz, A. V. Afanasjev, E. F. Brown, A. Deibel, L. R. Gasques, G. W. Hitt, W. R. Hix, L. Keek, P. Moller, P. S. Shternin, A. W. Steiner, M. Wiescher, and **Yi Xu**, Nuclear Reactions in the Crusts of Accreting Neutron Stars, *Astrophysical Journal 859 (2018) 62*.

[4] J.J. He, I. Lombardo, D. Dell'Aquila, **Yi Xu**, L.Y. Zhang, and W. P. Liu, Thermonuclear 19F(p,a0)16O reaction rate, *Chinese Physics C 42 (2018) 015001*.

[5] M. La Cognata, A. Anzalone, D. Balabanski, S. Chesnevskaya, V. Crucilla, D. M. Filipescu, G. L. Guardo, M. Gulino, D. Lattuada, C. Matei, R. G. Pizzone, S. Romano, C. Spitaleri, A. Taffara, O. Tesileanu, A. Tumino, and **Yi Xu**, Gamma ray beams for Nuclear Astrophysics: first results of tests and simulations of the ELISSA array, *Journal of Instrumentation (JINST) 12 (2017) C03079*.

[6] **Yi Xu**, W. Luo, D. L. Balabanski, S. Goriely, C. Matei, and O. Tesileanu, Photonuclear reactions in astrophysical p-process: Theoretical calculations and experiment simulation based on ELI-NP, *Eur. Phys. J. Web of Conference 146 (2017) 01015*.

[7] J.J. He, A. Parikh, **Yi Xu**, S.Q. Hou, Y.H. Zhang, X.H. Zhou, and H.S. Xu, Thermonuclear ^{46}Cr(p,γ)^{47}Mn rate in type I X-ray bursts, *Phys. Rev. C 96 (2017) 045801*.

[8] W. Luo, H.Y. Lan, **Yi Xu**, and D.L. Balabanski, Implementation of the n-body Monte-Carlo event generator into the Geant4 toolkit for photonuclear studies, *Nuclear Instrument and Method A 849 (2017) 49*.

[9] S. Chesnevskaya, D.L. Balabanski, D. Choudhury, M. La Cognata, P. Constantin, D.M. Filipescu, D.G. Ghita, G.L. Guardo, D.Lattuada, C.Matei, A.Rotaru, C. Spitaleri, A. State, and **Yi Xu**, Characterization of X3 Silicon Detectors for the ELISSA Array at ELI-NP, *EPJ Web of Conferences 165 (2017) 01011*.

[10] G.L. Guardo, A. Anzalone, D.L. Balabanski, S. Chesnevskaya, W. Crucilla, D. Filipescu, M. Gulino, M. La Cognata, D. Lattuada, C. Matei, R.G. Pizzone, G. Rapisarda, S. Romano, C. Spitaleri, A. Taffara, A. Tumino, and **Yi Xu**, Nuclear Astrophysics at ELI-NP: the ELISSA

prototype tested at Laboratori Nazionali del Sud, *EPJ Web of Conferences 165 (2017) 01026*.

[11] S. Ataman, M. Cuciuc, L. D'Alessi, L. Neagu, M. Rosu, K. Seto, O. Tesileanu, **Yi Xu** and M. Zeng, Experiments with Combined Laser and Gamma Beams at ELI-NP, *AIP Conference Proceedings 1852 (2017) 070002*.

[12] K. Homma, O. Tesileanu, L. D'Alessi, T. Hasebe, A. Ilderton, T. Moritaka, Y. Nakamiya, K. Seto, H. Utsunomiya, and **Yi Xu**, Combined laser gamma experiments at ELI-NP, *Romanian Reports in Physics 68 Supplement (2016) S233*.

[13] C. Matei, D. L. Balabanski, O. Tesileanu, **Yi Xu**, M. La Cognata and C. Spitalieri, Nuclear astrophysics measurements with ELISSA at ELI-NP, *Il Nuovo Cimento 39 C (2016) 360.*

[14] S.M. Lukyanov, M.N. Harakeh, M.A. Naumenko, **Yi Xu**, W.H. Trzaska, V. Burjan, V. Kroha, J. Mrazek, V. Glagolev, S. Piskor, E.I. Voskoboynik, S.V. Khlebnikov, Yu.E. Penionzhkevich, N.K. Skobelev, Yu.G. Sobolev, G.P. Tyurin, K. Kuterbekov, and Yu. Tuleushev, Cluster Structure of ^{9}Be from ^{3}He +^{9}Be reaction, *Journal of Physics: Conference Series 724 (2016) 012031*.

[15] A.S. Denikin, S.M. Lukyanov, N.K. Skobelev, Yu.G. Sobolev, E.I. Voskoboynik, Yu.E. Penionzhkevich, W.H. Trzaska, G.P. Tyurin, V. Burjan, V. Kroha, J. Mrazek, S. Piskor, V. Glagolev, **Yi Xu**, S.V. Khlebnikov, M.N. Harakeh, K.A. Kuterbekov, and Yu. Tuleushev, Inelastic scattering and clusters transfer in ^{3,4}He + ^{9}Be reactions, *Physics of Particles and Nuclei Letters 12 (2015) 703.*

[16] **Yi Xu**, S. Goriely, A.J. Koning, and S. Hilaire, Systematic study of neutron capture including the compound, pre-equilibrium, and direct mechanisms, *Phys. Rev. C 90 (2014) 024604*.

[17] **Yi Xu**, K. Takahashi, S. Goriely, M. Arnould, M. Ohta, and H. Utsunomiya, NACRE II: an update and extension of the NACRE compilation of charged-particle-induced thermonuclear reaction rates for astrophysics, *Nuclear Physics A 918 (2013) 61*.

[18] **Yi Xu**, S. Goriely, A. Jorissen, G.L. Chen, and M. Arnould, BRUSsels Nuclear LIBrary (BRUSLIB), Nuclear Astrophysics Compilation of REactions II (NACRE II) and Nuclear NETwork GENerator v10.0 (NETGEN v10.0): The databases and tool for astrophysics applications, *Astronomy and Astrophysics 549 (2013) A106*.

[19] **Yi Xu**, and S. Goriely, Systematic study of direct neutron capture, *Phys. Rev. C 86 (2012) 045801*.

[20] A. Coc, S. Goriely, **Yi Xu**, M. Saimpert, and E. Vangioni, Standard Big-Bang Nucleosynthesis up to CNO with an improved extended nuclear network, *Astrophysical*

Journal 744 (2012) 158.

[21] **Yi Xu**, S. Goriely, A. Jorissen, K. Takahashi, and M. Arnould, The nuclear network generator NETGEN v10.0: A tool for nuclear astrophysics, *Astronomical Society of the Pacific Conference Series CS 445 (2011) 187.*

[22] **Yi Xu**, K. Takahashi, S. Goriely, and M. Arnould, NACRE II: An update of the NACRE compilation of A < 16 charged-particle thermonuclear reaction rates for astrophysics, *AIP Conference Proceedings 1377 (2011) 463.*

[23] **Yi Xu**, S. Goriely, and K. Takahashi, The NACRE II project: A status report, *AIP Conference Proceedings 1238 (2010) 187.*

[24] W. Luo, W. Xu, Q.Y. Pan, X.Z. Cai, Y.Z. Chen, G.T. Fan, G.W. Fan, Y.J. Li, W.H. Liu, G.Q. Lin, Y.G. Ma, W.Q. Shen, X.C. Shi, B.J. Xu, J.Q. Xu, **Yi Xu**, H.O. Zhang, Z. Yan, L.F. Yang, and M.H. Zhao, X-ray generation from slanting laser-Compton scattering for future energy-tunable Shanghai Laser Electron Gamma Source, *Applied Physics B 101 (2010) 761*.

[25] W. Luo, W. Xu, Q.Y. Pan, G.T. Fan, G.W. Fan, Y.J. Li, B.J. Xu, **Yi Xu**, Z. Yan, and L.F. Yang, An X-ray spectroscopy system and its application to the laser-Compton scattering experiments, *Nuclear Instruments and Methods A 624 (2010) 141*.

[26] W. Luo, W. Xu, Q.Y. Pan, X.Z. Cai, J.G. Chen, G.T. Fan, G.W. Fan, W. Guo, Y.J. Li, G.Q. Lin, Y.G. Ma, W.Q. Shen, X.C. Shi, H.W. Wang, B.J. Xu, J.Q. Xu, **Yi Xu**, Z. Yan, L.F. Yang, and M.H. Zhao, A laser-Compton scattering prototype experiment at 100 MeV LINAC of Shanghai Institute of Applied Physics, *Review of Scientific Instruments 81 (2010) 013304*.

[27] **Yi Xu**, W. Xu, Y.G. Ma, X.Z. Cai, J.G. Chen, G.T. Fan, W. Guo, Q.Y. Pan, G.W. Fan, W. Luo, and L.F. Yang, Determination of the stellar reaction rate for $^{12}C(\alpha,\gamma)^{16}O$: Using a new expression with the reaction mechanism, *Chinese Physics B 18 (2009) 1421*.

[28] J.G. Chen, W. Xu, H.W. Wang, W. Guo, Y.G. Ma, X.Z. Cai, G.C. Lu, **Yi Xu**, Q.Y. Pan, R.Y. Yuan, J.Q. Xu, Z.Y. Wei, Z. Yan, and W.Q. Shen, A potential photo-transmutation of fission products triggered by Compton backscattering photons, *Nuclear Instrument and Method A 599 (2009) 118*.

[29] Q.Y. Pan, W. Xu, W. Luo, X.Z. Cai, J.G. Chen, G.T. Fan, G.W. Fan, W. Guo, Y.J. Li, G.Q. Lin, Y.G. Ma, W.Q. Shen, X.C. Shi, H.W. Wang, B.J. Xu, J.Q. Xu, **Yi Xu**, Z. Yan, L.F. Yang, and M.H. Zhao, A future laser-Compton scattering ray source: SLEGS at SSRF, *Synchrotron Radiation News 22 3 (2009) 11*.

[30] W. Guo, **Yi Xu**, J.G. Chen, Y.G. Ma, W. Xu, X.Z. Cai, and H.W. Wang, Shanghai Laser Electron Gamma Source and its applications, *Chinese Physics C 32 (2008) 190*.

[31] G.T. Fan, W. Xu, Y.G. Ma, C.J. Lin, Q.Y. Pan, **Yi Xu**, J.G. Chen, W. Guo, L.F. Yang, G.W. Fan, and W. Luo, Measurement of electric polarizabilities of light nucleus, *Chinese Physics C 32 (2008) 166*.

[32] J.G. Chen, W. Xu, H.W. Wang, W. Guo, Y.G. Ma, X.Z. Cai, G.C. Lu, **Yi Xu**, Q.Y. Pan, R.Y. Yuan, J.Q. Xu, Z. Yan, G.T. Fan, and W.Q. Shen, Transmutation of nuclear wastes using photonuclear reactions triggered by Compton backscattering photons at the Shanghai Laser Electron Gamma Source, *Chinese Physics C 32 (2008) 677*.

[33] **Yi Xu**, W. Xu, Y.G. Ma, W. Guo, J.G. Chen, X.Z Cai, H.W. Wang, C.B. Wang, G.C. Lu, and W.Q. Shen, A new study for $^{16}O(\gamma,\alpha)^{12}C$ at the energies of nuclear astrophysics interest: The inverse of key nucleosynthesis reaction $^{12}C(\alpha,\gamma)^{16}O$, *Nuclear Instrument and Method A 581 (2007) 866.*

[34] J.G. Chen, W. Xu, H.W. Wang, W. Guo, Y.G. Ma, X.Z. Cai, G.C. Lu, **Yi Xu**, Q.Y. Pan, R.Y. Yuan, J.Q. Xu, Z.Y. Wei, Z. Yan, and W.Q. Shen, An X-ray source based on Compton backscattering of CO_2 laser and 100 MeV electrons, *Nuclear Instrument and Method A 580 (2007) 1184*.

[35] W. Guo, W. Xu, J.G. Chen, Y.G. Ma, X.Z. Cai, H.W. Wang, **Yi Xu**, C.B. Wang, G.C. Lu, R.Y. Yuan, J.Q. Xu, Z.Y. Wei, Z. Yan, and W.Q. Shen, A high intensity beam line of gamma-rays up to 22 MeV energy based on Compton backscattering, *Nuclear Instrument and Method A 578 (2007) 457*.

[36] **Yi Xu**, W. Xu, Y.G. Ma, X.Z. Cai, J.G. Chen, J.H. Gu, W. Guo, Q.Y. Pan, W.Q. Shen, C.B. Wang, H.W. Wang, J.Q. Xu, and R.Y. Yuan, Study on the reaction rate of key reaction $^{12}C(\alpha,\gamma)^{16}O$ in astrophysics base on Shanghai Laser Electron Gamma Source, *High Energy Physics and Nuclear Physics 30 (2006) 252*. (Now: Chinese Physics C)

Presentation and Poster in Scientific Conference

1. *Photonuclear reactions in astrophysical p-process: Theoretical calculations and experiment simulation based on ELI-NP*, 16th International conference on Capture Gamma-ray and Related Topics (CGS16) in Shanghai, China, 18 - 22 September, 2017.

2. *Photonuclear reactions in astrophysical p-process: Theoretical calculations and experiment simulation based on ELI-NP*, International conference on nuclear data for science and technology (ND2016) in Bruges, Belgium, 11 - 16 September, 2016.

3. *Achievements and Progresses on Nuclear Astrophysics Research: Systematic study of astrophysical capture reactions by including the compound, pre-equilibrium, and direct mechanisms,* Workshop on Nuclear Astrophysics holding by Grand Accelerateur National d'Ions Lourds (GANIL) and Center of Accelerators and Nuclear Analytical Methods (CANAM), Nuclear Physics Institute, Czech Academy of Sciences in Prague, Czech

Republic, 21 - 22 July, 2014.

4. *NACRE II: An update and extension of the NACRE compilation of charged-particle-induced thermonuclear reaction rates for astrophysics,* Workshop on Thermonuclear Reaction Rates for Astrophysics Applications holding by Institut d'Astronomie et d'Astrophysique, Universite libre de Bruxelles and Institute of Nuclear Physics, National Centre of Scientific Research "Demokritos" in Athens, Greece, 24 - 25 November, 2011.

5. *NACRE II: An update and extension of the NACRE compilation of charged-particle-induced thermonuclear reaction rates for astrophysics,* 14th International Symposium on Capture Gamma-Ray Spectroscopy and Related Topics, Guelph, Canada, 28 August - 02 September, 2011.

6. *NACRE II: An update of the NACRE compilation of A < 16 charged-particle thermonuclear reaction rates for astrophysics,* International Conference on Frontiers in Nuclear Structure, Astrophysics and Reactions (FINUSTAR3), Rhodos, Greece, 23 - 27 August, 2010.

7. *The nuclear network generator NETGEN v10.0: A tool for nuclear astrophysics,* Why Galaxies Care about AGB Stars II, Vienna, Austria, 16 - 20 August, 2010.

8. *Study on the reaction rate of key reaction* $^{12}C(\alpha,\gamma)^{16}O$ *in astrophysics base on Shanghai Laser Electron Gamma Source,* 11th National Conference on Nuclear Structure, Changchun, China, 13 - 20 July, 2006.

9. *The SLEGS prototype at SINAP LINAC,* Nuclear Physics Trends: 6th China-Japan Joint Nuclear Physics Symposium, Shanghai, China, 16 - 20 May, 2006.

Expertise

1. Theoretical nuclear physics and nuclear astrophysics

- Nuclear structure model: Single Particle Model (HFB, Shell Model) and QRPA
- Theory and model for direct reaction: DWBA, Coupled Channels and Potential Model
- Theory and model for compound reaction: R-matrix and Hauser-Feshbach Model
- Nuclear data compilation and evaluation
- Thermonuclear reaction rate and nucleosynthesis

2. Computer skill

- Experience on both Linux and Windows operation systems
- FORTRAN, C/C++ and Python
- JavaScript, Perl and HTML
- AutoCAD
- GEANT4 and ROOT