Prof. Dr. Shuifa Shen

Frontier Division

Institute of Nuclear Energy Safety Technology, Hefei Institutes of Physical Science

Chinese Academy of Sciences · FDS Team

Objective:

To Apply for Associate Membership of the World Academy of Sciences

Education:

* Ph. D. Shanghai Institute of Nuclear Research (The name of this institute has been changed now. The new name is Shanghai Institute of Applied Physics), Academia Sinica, in Nuclear Structure Theory and Nuclear Spectroscopy. March 2002-March 2005. Ph. D. program is the study of nuclear Structure in A~80 region.

* M. S. Institute of Modern Physics, Academia Sinica, in Synthesis and Identification of New Nuclide and in Nuclear Decay Spectroscopy. August 1994-July 1997. M. S. program is to study the decay scheme of ^{229}Ra and the synthesis and identification of the new nuclide ^{186}Hf.

* 2018-2020, undergraduate of Computer Science and Technology, Anhui University (using spare time).

* 2015-2017, undergraduate of English, Anhui Agricultural University (using spare time).

* B. S. Huzhou University, Physics Department, Zhejiang Province, August 1984-July 1987, P. R. China.

Research Experiences

* Oct. 2018 to Apr. 2019. Senior Visiting Fellow, University of Surrey, the United Kingdom

* Jan. 2013 to Present. Research Professor, Institute of Nuclear Energy Safety Technology, CAS

* Sep. 2005 to Dec. 2012. Professor, East China University of Technology (Jan. 2006 to Feb. 2008. Postdoctoral Researcher at Department of Technical Physics, School of Physics, Peking University, Beijing, China; Nov. 2010 to May 2012. Postdoctoral Researcher at School of Physics, Suranaree University of Technology, Thailand)

* Dec. 2002 to Sep. 2005. Associate Professor, Shanghai Institute of Nuclear Research, Academia

Sinica

* Aug. 1997 to Nov. 2002. Assistant Professor, Shanghai Institute of Nuclear Research, Academia Sinica

* Aug. 1987 to July 1994. Physics Teacher in a Middle School in Zhejiang Province, P. R. China.

Professional Societies:

* Italian Physical Society

* China Center of Advanced Science and Technology (CCAST(World Lab.))

* Shanghai Nuclear Society

Research Areas:

Nuclear structure theory

New nuclide synthesis and identification

Nuclear spectroscopy

Prizes and Honors:

*Synthesis and Identification of New Nuclide ^{235}Am, won the one of top ten news in science and technology in P. R. China in 1996.

*Synthesis and Identification of New Nuclides including ^{186}Hf and ^{235}Am was awarded the second prize of the national natural science, P. R. China.

*In 2005 when I was a Ph. D. candidate I was awarded Yongling Liu prize, Academia Sinica. (Mr. Yongling Liu is a famous entrepreneur in Hongkong.)

*In 2007 I was awarded the special allowance from the State Council of P. R. China.

*In 2007 I was selected as the key teacher of colleges and universities in Jiangxi province, P. R. China

*In 2009 I was selected as the hundred－thousand－ten thousand talent project, Jiangxi Province, P. R. China

*In 2019 I was selected as the chair professor of Minjiang Scholars Program in Fujian Province, P. R. China

Selected Publications (more than 80 papers have been published in peer-reviewed journals and international conferences):

1. **Shen Shuifa,** Yu Xiaohan, Shi Shuanghui, Gu Jiahui, Liu Jingyi, Li Yan, Zhu Zhiyuan, Decay of ^{83}Sr and level structure of ^{83}Rb, *The European Physical Journal A*9, (2000)463
2. **Shen Shuifa**, Gu Jiahui, Shi Shuanghui, Liu Jingyi, Shen Wenqing, Signature Inversion Caused by Shape Change in ^{84}Rb, *Phys. Lett. B*554, (2003)115
3. **Shen Shuifa**, Chen Yongbo, Xu Furong, Zheng Shijie, Tang Bin, Wen Tingdun, Signature for rotational to vibrational evolution along the yrast line, *Phys. Rev. C*75, (2007)047304
4. **Shen Shuifa**, Fang Keming, Gu Jiahui, Liu Qingcheng, Xu Furong, Decay of 1.643-hr ^{95}Ru and its daughter's level structure, *The European Physical Journal A*32, (2007)149
5. **Shen Shuifa**, Zheng Shijie, Xu Furong, R. Wyss, Stability of triaxial shapes in ground and excited states of even-even nuclei in the A~70 region, *Phys. Rev. C*84, (2011)044315
6. **S.-F. Shen**, F. Pan, J.-Z. Gu, L.-H. Zhu, X.-G. Wu, J. P. Draayer, T.-D. Wen, Low-spin states and level structure of odd-even rubidium isotope: ^{83}Rb, *Nuclear Physics A*834, (2010)90c
7. **Shuifa Shen**, Guangbing Han, Shuxian Wen, Feng Pan, Jianyu Zhu, Jianzhong Gu, J P Draayer, Xiaoguang Wu, Lihua Zhu, Guangsheng Li, Beibei Yu, Tingdun Wen, Yupeng Yan, High-Spin States and Level Structure in Rubidium-84, *Physical Review C*82, (2010)014306

   Erratum: High-spin states and level structure in Rubidium-84 [Physical Review C82, 014306 (2010)], *Physical Review C*91, 029902(E) (2015)
8. **Shuifa Shen**, Guangbing Han, Shuxian Wen, Xuzhong Kang, Yupeng Yan, Zhijun Bai, Yican Wu, Xiaoguang Wu, Lihua Zhu, Guangsheng Li, Chuangye He, High－Spin States and Level Structure in Stable Nucleus Strontium-84, *Scientific Reports* 3, (2013)2740
9. Chuangye He, **Shuifa Shen***(corresponding author), Shuxian Wen, Lihua Zhu, Xiaoguang Wu, Guangsheng Li, Yue Zhao, Yupeng Yan, Zhijun Bai, Yican Wu, Yazhou Li, Gui Li, Shiwei Yan, M. Oshima, Y. Toh, A. Osa, M. Koizumi, Y. Hatsukawa, M. Matsuda, T. Hayakawa, Signature splitting inversion and backbending in ^{80}Rb, *Physical Review C*87(2013)034320
10. S.J. Zheng, F.R. Xu*(corresponding author), **S.F. Shen**$^{+}$(corresponding author), H.L. Liu, R. Wyss, Y.P. Yan, Shape coexistence and triaxiality in nuclei near ^{80}Zr, *Physical Review C*90(2014)064309
11. **Shen Shuifa**, Li Yan, Shi Shuanghui, Gu Jiahui, Liu Jingyi, New Low-spin Levels in ^{72}Ge and

Discussion of Its Yrast Band Structure, *Journal of the Physical Society of Japan*, Vol.74 (2005)299

12. **Shen Shuifa**, Wang Fengge, Gu Jiahui, Liu Yujuan, Tang Bin, Jiang Weizhou, Decay of ^{101}Mo and band structures of its daughter nuclide ^{101}Tc in the projected shell model, *Journal of the Physical Society of Japan*, Vol.75 (2006)014201
13. W.F.Yang, S.G.Yuan, K.M.Fang, **S.F.Shen**, W.T.Mou, X.Q.Zhang, Z.Q.Li, The Decay Scheme of ^{229}Ra, *Z. Phys. A*358(1997)3
14. J.Guo, Z.Gan, H.Liu, W.Yang, L.Shi, W.Mu, T.Guo, K.Fang, **S.Shen**, S.Yuan, X.Zhang, Z.Qin, R.Ma, J.Zhong, S.Wang, D.Kong, J.Qiao A New Neutron-Deficient Isotope, ^{235}Am, *Z. Phys. A*355, (1996)111
15. S.Yuan, W.Yang, Z.Li, J.He, T.Ma, K.Fang, **S.Shen**, Z.Gan, Q.Pan, Z.Chen, T.Guo, W.Mou, D.Su, Y.Xu, J.Guo, H.Liu, L.Shi, Z.Zhao, H.Ma, Production and identification of a new heavy neutron-rich isotope ^{186}Hf, *Phys. Rev. C*57, (1998)1506
16. Jiang Weizhou, Zhao Yaolin, Zhu Zhiyuan, **Shen Shuifa**, The role of ρNN tensor coupling and $2s_{1/2}$ occupation in light exotic nuclei, *Phys. Rev. C*72, 024313 (2005)
17. Dida Zhang, Zhongyu Ma, Baoqiu Chen, **Shuifa Shen**, Alpha-decay halflives of superheavy elements with the Dirac Brueckner-Hartree Fock (DBHF) nucleon effective interaction, *Phys. Rev. C*81, (2001)044319(Dida Zhang is my master student)
18. W.H. Zou, Y. Tian, J.Z. Gu, **S.F. Shen**, J.M. Yao, B.B. Peng, Z.Y. Ma, Microscopic description of nuclear structure around ^{80}Zr, *Phys. Rev. C*82, (2010)024309(W.H. Zou is my master student)
19. J.-Z. Gu, B.-B. Peng, W.-H. Zou, **S.-F. Shen**, Decay out of a superdeformed band: chaoticity dependence and a microscopic understanding, *Nuclear Physics A*834, (2010)87c
20. Li Yan, **Shen Shuifa** et al., A decay study of ^{70}As, *Applied Radiation and Isotopes* 57(2002)399
21. **Shen Shuifa**, Li Yan, Gu Jiahui et al., New levels and transitions in ^{72}Ge observed in the ^{72}As(β^+ +EC)^{72}Ge decay, International Journal of Modern Physics, E17(2008)1061
22. Zhang Xiaodong, Li Qingnuan, Li Wenxin, Sheng Rong, **Shen Shuifa**, Production of no-carrier-added ^{186}Re via deuteron induced reactions on isotopically enriched ^{186}W, *Applied*

Radiation and Isotopes 54(2001)89

23. **Shen Shuifa**, Li Yan, Huang Wenda, Shi Shuanghui, Gu Jiahui, Liu Jingyi, Xu Hui, Decay of ^{76}Br and its daughter's level structure, *Journal of the Physical Society of Japan*, Vol.73 No.5(2004)1180

Shen Shuifa, Li Yan, Huang Wenda, Shi Shuanghui, Gu Jiahui, Liu Jingyi, Xu Hui, Addendum to "Decay of ^{76}Br and its daughter's level structure", Journal of the Physical Society of Japan, 80(2011)067001

24. T.L.Yang, **S.F. Shen***(Corresponding author), H.L. Liu, J.Y. Zhu, C.F. Jiao, F.H. Hao, F.R. Xu, A theoretical perspective on triggered gamma emission from ^{178}Hf^{m2} isomer, *Progress of Theoretical Physics* 124, (2010)605

25. **S.F. Shen**, T.D. Wen, S.J. Zheng, J.Z. Gu, H.L. Liu, Y.B. Chen, T.T. Wang, Triaxial shape in Os－Pt region from ground states to collective rotational states, *Modern Physics Letters A*25(2010)805

26. Fang Keming Yang Weifan, Mou Wangtong, Yuang Shuanggui, Li Zongwei, **Shen Shuifa**, Zhang Xueqian, Separation of Protactinium from Thorium Irradiated by 14MeV Neutrons, Chinese Jour. Nuclear and Radiochemistry Vol. 20 (1998)176

27. **Shen Shuifa**, Wang Fengge, Fang Keming, Xu Furong, Study of nuclear level structure in Tc Isotopes with mass A~100, Chinese Jour. High Energ. Phys. Nucl. Phys., 31(2007)543

28. **Shen Shuifa**, Chen Xueshi, Wang Zixing, Shi Shuanghui, Gu Jiahui, Liu Jingyi, Theoretical study of the low-lying prolate bands in the nuclei $^{186, 188, 190}$Pb, Acta Physica Sinica, 48(1999)1420

29. **Shen Shuifa**, Li Yan, Gu Jiahui, Gamma spectrum measurement following the nuclear decay, Chinese Jour. Nculear Techniques, 29(2006)489

30. Zhao Yue, Kang Xuzhong, **Shen Shuifa***(corresponding author), Yan Yupeng, He Chuangye, Yan Shiwei, High-spin states in transuranium nuclei $^{242, 244}$Pu, Chinese Physics Letters, 29(2012)052101 (Zhao Yue is my master student)

31. **Shuifa Shen***(corresponding author), Yupeng Yan, Jiejie Shen, Jing Song, Mengyun Cheng, Lijuan Hao, A new ground-state band energy formula for transitional nuclei, arXiv:1710.06986

32. **Shuifa Shen***(corresponding author), Feipeng Wang, Jiejie Shen, Guangbing Han, Shuxian

Wen, Yupeng Yan, Xiaoguang Wu, Lihua Zhu, Chuangye He, Guangsheng Li, Possible Magnetic Rotational Bands in ^{84}Rb, Physics Open 9(2021) 100091

33. **Shui-Fa Shen**, Wei-Liang Qian, Kai Lin, Cheng-Gang Shao, and Yu Pan, Matrix method for perturbed black hole metric with discontinuity, Classical and Quantum Gravity 39(2022) 225004

34. **Shui-Fa Shen**, Wei-Liang Qian, Hong Guo, Shao-Jun Zhang, Jin Li, An implementation of the matrix method using Chebyshev grid, arXiv: 2211.07023v1, Progress of Theoretical and Experimental Physics, 2023 093E01

35. **Shuifa Shen**, Chuangye He, Yupeng Yan, Jing Pan, Feipeng Wang, Guangyong Pan, Jun Chen, Jiejie Shen, Shunli Tang, Haibin Jiang, Fuming Zou, Tianjan Li, Possible Magnetic Rotational Band in ^{77}Kr, ScienceAsia 49 (2023) 703

36. Feipeng Wang, Minghan Yang, Jianye Wang, **Shuifa Shen**, Bing Hong, A comparison of small-batch clustering and charge-comparison methods for n/γ discrimination using a liquid scintillation detector, Nuclear Inst. and Methods in Physics Research, A1028 (2022) 166379

37. Jinlan Jiang, **Shuifa Shen** and Dongbiao Kang, Azimuthal controlling of electromagnetically induced phase grating in five-level quantum systems, Laser Phys. Lett. 19(2022)045202

38. Jun Chen, Wanhai Liu, **Shuifa Shen**, Dongbiao Kang, Jun Yu, Molecular dynamics simulations of the absorption of polymer chains on the Ψ-graphene nanotubes, Physica B675 (2024) 415582, DOI: https://doi.org/10.1016/j.physb.2023.415582

39. Shaolei Jiang, Bo Song, Zhongdong Liu, **Shuifa Shen**, Weiliang Qian, Jing Sun, Gaowei Chen, Yingjie Zhu, Neuronal activity in the anterior paraventricular nucleus of thalamus positively correlated with sweetener consumption in mice, Neuroscience Research 205 (2024) 16

40. Jian Lin, Feipeng Wang, Jinkai Wang, Zhixin Xu, Minghan Yang, Bing Hong, Nuo Yong, Dongqin Xia, Daochuan Ge, **Shuifa Shen**, An Investigation of γ Radiation Detection with a CMOS Imaging Sensor, Scientific Reports 14, 23399 (2024)

41. **Shui-Fa Shen**, Wei-Liang Qian, Jie Zhang, Yu Pan, Yu-peng Yan and Cheng-Gang Shao, Matrix method and the suppression of Runge's phenomenon, SciPost Physics Core 7, 034 (2024)

42. **Shuifa Shen**, Muhammad Zahir Faridi, Raima Nazar, and Sajid Ali, Asymmetric Nexus between Nuclear Energy Technology Budgets and Carbon Emissions in European Economies:

Evidence from Quantile-on-Quantile Estimation, Nuclear Engineering and Technology 56(2024)3298

43. **Shuifa Shen**, Sohail Rehman, Syed Omar Shah, Fethi Albouchi, Somiya Rauf, Entropy optimization and heat transfer in thin film flow of electromagnetic micropolar nanofluid using Maxwell–Bruggeman and Krieger–Dougherty models, Alexandria Engineering Journal 106(2024)71

44. **Shui-Fa Shen**, Kai Lin, Tao Zhu, Yu-Peng Yan, Cheng-Gang Shao, and Wei-Liang Qian, Two distinct types of echoes in compact objects, arXiv:2408.00971v1, Physical Review D110, 084022 (2024)

Self-introducation:

My study focuses on synthesis and identification of new nuclides, nuclear structure theory, nuclear spectroscopy and application of radiation and Isotopes. In the past 30 years, more than 80 papers were published in peer-reviewed journals and international conferences including more than 20 papers published in Physics Letters B, Physical Review C, Physical Review D, Zeitschrift für Physik A, The European Physical Journal A, Nuclear Physics A, Scientific Reports, Classical and Quantum Gravity and Applied Radiation and Isotopes. Synthesis and identification of new nuclide ^{235}Am won one of the top ten news in science and technology in China in 1996. I was awarded the special allowance of the State Council in 2007, chosen as the key teacher of colleges and universities in Jiangxi province in 2007, selected as new century talents project in Jiangxi province in 2009, and selected as the chair professor of minjiang scholars program in Fujian Province in 2020.