Meng-Ru Wu

Curriculum Vitae

Institute of Physics, Academia Sinica
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Research Interests

Particle astrophysics: neutrino flavor oscillations in dense media; neutrino signals from astrophysical sources; probing bSM physics with astrophysics; quarks in neutron stars;
Nuclear astrophysics: nucleosynthesis in core-collapse supernovae and neutron star mergers; neutrino transport; electromagnetic signals from astrophysical transients; chemical evolution of galaxies.

Education

University of Minnesota, Minneapolis, U.S.A. Doctor of Philosophy, School of Physics and Astronomy	09/2007–10/2012
National Tsing–Hua University, Hsinchu, Taiwan Bachelor of Science, Department of Physics	09/2001–06/2005

Research Employments

Associate Research Fellow, Institute of Physics, Academia Sinica, Taiwan	06/2022–present
Assistant Research Fellow, Institute of Physics, Academia Sinica, Taiwan	09/2017–05/2022
Joint Assistant Research Fellow, Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan	10/2017–present
Center Scientist, National Center for Theoretical Sciences	01/2023–present
Junior Center Scientist, National Center for Theoretical Sciences, Taiwan	01/2020–12/2020
Post-doctoral Researcher, Niels Bohr Institute, Denmark	09/2016–08/2017
Post-doctoral Researcher, Technische Universität Darmstadt, Germany	01/2013–08/2016

Awards (selected)

1. AAPPS-APCTP C. N. Yang Award, AAPPS, 2022.
2. Career Development Award, Academia Sinica, 2020.
3. Young Theorist Award, Physics Division, National Center of Theoretical Sciences, 2019.
4. Humboldt Research Fellowship for Postdoctoral Researchers, Alexander von Humboldt Foundation, 2013–2014
5. Aneesur Rahman Award, School of Physics and Astronomy, University of Minnesota, 2012

Research Grants

1. PI of the NSTC Excellent Young Scholars Research Grant "Frontiers in particle and nuclear astrophysics: neutrinos, nucleosynthesis, and exotic physics", 2022-2026.
2. PI of the AS Career Development Award Grant "Understanding the binary neutron star mergers – developing new computational tools for quantum neutrino transport and r-process nucleosynthesis", 2020-2024.
3. PI of MoST Research Grant "Explore unknown physics properties at the extreme in the era of the multimessenger astronomy", 2019-2022.
4. core member of NCTS Thematic Group "High Energy Phenomenology", 2021–present.
5. core member of NCTS Thematic Group "Computational and Theoretical Astrophysics", 2021–present.
6. co-PI of NCTS Seed Program "Multimessenger Astrophysics", 2019-2020.
7. co-PI of NCTS ECP2 Program "Light Dark Matter and Neutrinos", 2018-2020.
8. PI of MoST Research Grant "Explore neutrino-, nuclear-, and particle physics using the multimessenger signals of compact astrophysical objects", 2018-2019.
9. PI of Start-up Grant, Institute of Physics, Academic Sinica, 2017-2022.

Advisees

Postdoctoral researchers:

1. Madhurima Chakraborty, Postdoctoral researcher, Institute of Physics, Academia Sinica, 2023-present.
2. Soumya Bhattacharyya, Postdoctoral researcher, Institute of Physics, Academia Sinica, 2022-present.
3. Manu George, Postdoctoral researcher, Institute of Physics, Academia Sinica, 2018-2020, 2021-2024.
4. Herlik Wibowo, Postdoctoral researcher, Institute of Physics, Academia Sinica, 2020-2022.
5. Yen-Hsun Lin, Postdoctoral researcher, Institute of Physics, Academia Sinica, 2019-2021, 2023-present.
6. Gang Guo, Postdoctoral researcher, Institute of Physics, Academia Sinica, 2019-2020.
7. Huitzu Tu, Postdoctoral researcher, Institute of Physics, Academia Sinica, 2017-2019.

PhD students and master-degree research assistants:

1. Yi-Siou Wu, Master-degree research assistant, Institute of Physics, Academia Sinica, 2024-present.
2. Shih-Jue Huang, PhD student, National Taiwan University, 2023-present.
3. Heng-Hao Chen, Master-degree research assistant, Institute of Physics, Academia Sinica, 2023-present.

4. Le-Ren Chen, Master-degree research assistant, Institute of Physics, Academia Sinica, 2022-2023.
5. Jr-Hua Lien, Master-degree research assistant, Institute of Physics, Academia Sinica, 2019-2022.
6. Shuo-Yen Chen, Master-degree research assistant, Institute of Physics, Academia Sinica, 2020-2021.

Master students and bachelor-degree research assistants:

1. Yi-Siou Wu, Master student, National Taiwan University, 2022-2024.
2. Yu-Ting Chou, Master student, National Tsing-Hua University, 2019-2020, 2022-2023.
3. Yu An, Master student, Purple Mountain Observatory, 2022-2023, co-supervised.
4. Heng-Hao Chen, Master student, National Tsing-Hua University, 2021-2023.
5. Shih-Jie Huang, Master student, National Taiwan University, 2020-2023.
6. Geng-Yu Liu, Bachelor-degree research assistant, Institute of Physics, Academia Sinica, 2021-2022.
7. Wen-Hua Wu, Master student, National Taiwan University, 2021-2022.
8. Le-Ren Chen, Master student, National ChengChi University, 2020-2021.
9. Allan Sung, Bachelor-degree research assistant, Institute of Physics, Academia Sinica, 2019-2020.
10. Veronica Kirsebom, Master student, Niels Bohr Institute, 2016-2017, co-supervised.
11. Max Enders, Master student, TU Darmstadt, 2014-2015, co-supervised.

Undergraduate students:

1. Tsung-Han Tsai, Bachelor student, National Tsing-Hua University, 2022-2022.
2. Wei-Huai Chen, Bachelor student, National Taiwan University, 2021-2022.
3. Yi-Siou Wu, Bachelor student, National Taiwan University, 2021-2022.
4. Yu-Hsin Chen, Bachelor student, National Taiwan University, 2020-2021.
5. Wen-Hua Wu, Bachelor student, National Taiwan University, 2020-2021.
6. Heng-Hao Chen, Bachelor student, National Tsing-Hua University, 2020-2021.
7. Geng-Yu Liu, Bachelor student, National Taiwan University, 2019-2020.
8. Allan Sung, Bachelor student, National Taiwan University, 2018-2019.
9. Chun-Hao Chen, Bachelor student, National Chiao Tung University, 2018-2019.
10. Leon Kerber, Bachelor student, TU Darmstadt, 2016-2017, co-supervised.
11. Omar El Sayed, Bachelor student, TU Darmstadt, 2015-2016, co-supervised.

Scientific Activities & Services

- Editor for Nuclear Physics of AAPPS Bulletin, 2023-2026;
- Organizer of the 15th Particle Physics Phenomenology Workshop (PPP15), 21-24 October 2024, Taipei, Taiwan.
- Organizer of the NCTS Annual Thoery Meeting, 15-17 December 2023, Taipei, Taiwan.
- International Advisory Committee member for the 22nd International Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN23), 2023.
- Main Organizer of the Focus workshop on collective oscillations and chiral transport of neutrinos, 14-17 March 2023, Taipei, Taiwan.
- Organizer of the EMMI+IReNA Workshop Remnants of neutron-star mergers – Connecting hydrodynamics models to nuclear, neutrino, and kilonova physics, October 17-20, 2022, Darmstadt, Germany.
- Organizer of the 14th Particle Physics Phenomenology Workshop (PPP14), June 22-24, 2022, Taipei, Taiwan (remote).
- Organizer of the NCTS-TCA Summer Student Program 2022, July-August, 2022 (remote).
- Organizer of the workshop Cosmology Frontier in Particle Physics: Astroparticle Physics and Early Universe / International Joint Workshop on the SM and Beyond, October 14-15, 2021, Taipei, Taiwan.
- Organizer of the NCTS-TCA Summer Student Program 2021, July-August, 2021 (remote).
- Organizer of the Rapid Response Workshop on Muon g-2, April 30, 2021, Taipei, Taiwan.
- Main organizer of the miniworkshop on Novel Experimental and Astrophysical Probes for Dark Matter, 05 March 2021, Taipei, Taiwan.
- Deputy Secretary-General of TPS, 2020-2021.
- Organizer of the workshop – Multiscale Feedback on Galaxy Evolution: From Stellar Explosions to Active Galactic Nuclei, 20-22 October 2020, Hsinchu, Taiwan.
- Organizer of the Numerical Astrophysics Summer School: Astrophysical Fluid Dynamics, 04-06 September 2019, Hsinchu, Taiwan.
- Main organizer of the mini-workshop on massive stars, core-collapse supernovae, and nucleosynthesis, 08-09 April 2019, Taipei, Taiwan.
- LOC member, 2018 TIARA Summer School on Origins of the Solar System, 16-20 July 2018, Taipei, Taiwan.
- Main organizer of 3$^{\text{rd}}$ Astrophysical Nuclear Reaction Network School, 19-26 August 2016, Schmitten, Germany.
- Organizer of Nuclear Physics Seminar, Spring 2012, University of Minnesota.
- Referee of Science, Physical Review Letters, Physical Review D, Physical Review C, Physics Letters B, Astrophysical Journal Supplemental Series, Monthly Notice of Royal Astronomical Society, Journal of Physics G, European Physical Journal A, International Journal of Modern Physics D, Astroparticle Physics, Chinese Journal of Physics.

Publication Lists

Publications in refereed Journals

1. Y.-H. Lin, **M.-R. Wu**, "Supernova-neutrino-boosted dark matter from all galaxies", PRL 133 (2024) 11, 111004 [arXiv:2404.08528].
2. Z. Xiong, **M.-R. Wu**, M. George, et al, "Fast neutrino flavor conversions in a supernova: emergence, evolution, and effects", PRD 109 (2024) 8, 083019 [arXiv:2402.19252].
3. G. Guo, G. Martinez-Pinedo, **M.-R. Wu**, "Neutrino-Neutron Scattering Opacities in Supernova Matter", PRC 110 (2024) 1, 015504 [arXiv:2401.10737].
4. G. Guo, Y.-Z. Qian, **M.-R. Wu**, "Effects of Annihilation with Low-Energy Neutrinos on High-Energy Neutrinos from Binary Neutron Star Mergers and Rare Core-Collapse Supernovae", PRD 109 (2024) 8, 083020 [arXiv:2310.05137].
5. S. Abbar, **M.-R. Wu**, Z. Xiong, "Application of Neural Networks for the Reconstruction of Supernova Neutrino Energy Spectra Following Fast Neutrino Flavor Conversions", PRD 109 (2024) 8, 083019 [arXiv:2401.17424].
6. S. Abbar, **M.-R. Wu**, Z. Xiong, "Physics-informed neural networks for predicting the asymptotic outcome of fast neutrino flavor conversions", PRD 109 (2024) 4, 043024 [arXiv:2311.15656].
7. T. Fischer, G. Guo, K. Langanke, G. Martinez-Pinedo, Y.-Z. Qian, **M.-R. Wu**, "Neutrinos and nucleosynthesis of elements", PPNP 137 (2024) 104107 [arXiv:2308.03962].
8. Z. Xiong, **M.-R. Wu**, S. Abbar, et. al., "Evaluating approximate asymptotic distributions for fast neutrino flavor conversions in a periodic 1D box", PRD 108 (2023) 6, 063003 [arXiv:2307.11129].
9. Y.-H. Lin, T.-H. Tsai, G.-L. Lin, H. T.-K. Wong, **M.-R. Wu**, "Signatures of afterglows from light dark matter boosted by supernova neutrinos in current and future large underground detectors", PRD 108 (2023) 8, 083013 [arXiv:2307.03522].
10. Y. An, **M.-R. Wu**, G. Guo, et. al., "R-process beta-decay neutrino flux from binary neutron star merger and collapsar", PRD 108 (2023) 12, 123038 [arXiv:2306.07659].
11. Z. Xiong, **M.-R. Wu**, Y.-Z. Qian, "Symmetry and bipolar motion in collective neutrino flavor oscillations", PRD 108 (2023) 4, 043007 [arXiv:2303.05906].
12. G. Guo, Y.-Z. Qian, **M.-R. Wu**, "Signature of Collapsars as Sources for High-energy Neutrinos and r-process Nuclei", PRD 108 (2023) 2, L021303 [arXiv:2212.08266].
13. Z. Xiong, L. Johns, **M.-R. Wu**, H. Duan, "Collisional flavor instability in dense neutrino gases", PRD 108 (2023) 8, 083002 [arXiv:2212.03750].
14. Z. Xiong, **M.-R. Wu**, G. Martinez-Pinedo et. al., "Evolution of collisional neutrino flavor instabilities in spherically symmetric supernova models", PRD 107 (2023) 8, 083016, [arXiv:2210.08254].
15. A. Bauswein, G. Guo, J.-H. Lien, Y.-H. Lin, **M.-R. Wu**, "Compact Dark Objects in Neutron Star Mergers", PRD 107 (2023) 8, 083002, [arXiv:2012.11908].
16. Y.-H. Lin, W.-H. Wu, **M.-R. Wu**, H. T.-K. Wong, "Searching for Afterglow: Light Dark Matter boosted by Supernova Neutrinos", PRL 130 (2023) 11, 111002, [arXiv:2206.06864].

17. G. Sigurdarson, I. Tamborra, **M.-R. Wu**, "Resonant Production of Light Sterile Neutrinos in Compact Binary Merger Remnants", PRD 106 (2022) 12, 123030, [arXiv:2209.07544].
18. M. George, C.-Y. Lin, **M.-R. Wu**, et. al., "COSEν: A Collective Oscillation Simulation Engine for Neutrinos", CPC 283 (2023) 108588, [arXiv:2203.012866].
19. S. Richers, H. Duan, **M.-R. Wu**, et. al., "Code comparison for fast flavor instability simulations", PRD 106 (2022) 4, 043011 [arXiv:2205.06282].
20. **M.-R. Wu**, P. Banerjee, "The Production of Actinides in Neutron Star Mergers", AAPPS Bulletin 32 (2022) 1, 19 [arXiv:2205.11806].
21. O. Just, S. Abbar, **M.-R. Wu**, I. Tamborra, H.-T. Janka, F, Capozzi, "Fast Neutrino Conversion in Hydrodynamic Simulations of Neutrino-Cooled Accretion Disks", PRD 105 (2022) 8, 083024 [arXiv:2203.16559].
22. P. Banerjee, **M.-R. Wu**, Jeena S. K, "Constraints on R-process Nucleosynthesis from ^{129}I and ^{247}Cm in the Early Solar System", MNRAS 512 (2022) 4, 4948 [arXiv:2110.05449].
23. **M.-R. Wu**, M. George, C.-Y. Lin, Z. Xiong, "Collective fast neutrino flavor conversions in a 1D box: Initial condition and long-term evolution", PRD 104 (2021) 10, 103003 [arXiv:2108.09886].
24. A. A. Aziz, N. S. Ahmad, S. Ahn. et. al., "Progress in nuclear astrophysics of east and southeast Asia", AAPSS Bull. 31 (2021) 1, 18 [arXiv:2108.03814].
25. A. Sung, G. Guo, **M.-R. Wu**, "Supernova Constraint on Self-Interacting Dark Sector Particles", PRD 103 (2021) 10, 103005, [arXiv:2102.04601].
26. M. George, **M.-R. Wu**, I. Tamborra, R. Ardevol-Pulpillo, H.-T. Janka, "Fast neutrino flavor conversion, ejecta properties, and nucleosynthesis in newly-formed hypermassive remnants of neutron-star mergers", PRD 102 (2020) 10, 103015 [arXiv:2009.04046].
27. G. Guo, Y.-L. S. Tsai, **M.-R. Wu**, Q. Yuan, "Elastic and Inelastic Scattering of Cosmic-Rays on Sub-GeV Dark Matter", PRD 102 (2020) 10, 103004, [arXiv:2008.12137].
28. P. Banerjee, **M.-R. Wu**, Z. Yuan, "Neutron Star Mergers as the Main Source of R-process: Natal Kicks And Inside-Out Evolution to The Rescue", ApJL 902 (2020) 2, L34, [arXiv:2007.04442].
29. J. Tang, T.-C. Wang, **M.-R. Wu**, "Constraining sterile neutrinos by core-collapse supernovae with multiple detectors", JCAP 10 (2020) 038, [arXiv:2005.09168].
30. S. A. Giuliani, G. Martínez-Pinedo, **M.-R. Wu**, L. Robledo, "Fission and the r-process nucleosynthesis of translead nuclei", PRC 102 (2020) 4, 045804, [arXiv:1904.03733].
31. G. Guo, Y.-L. S. Tsai, **M.-R. Wu**, "Probing High-Energy Light Dark Matter with IceCube", JCAP 10 (2020) 049, [arXiv:2004:03161].
32. A. M. Suliga, I. Tamborra, **M.-R. Wu**, "Lifting the core-collapse supernova bounds on keV-mass sterile neutrinos", JCAP 08 (2020) 018 [arXiv:2004:11389].
33. T. Fischer, **M.-R. Wu**, B. Wehmeyer, N.-U. F. Bastian, G. Martínez-Pinedo, F.-K. Thielemann, "Core-collapse supernova explosions driven by the hadron-quark phase transition as rare r process site", Astrophys. J. 894, 9 (2020) [arXiv:2003.00972].
34. G. Guo, Y.-Z. Qian, **M.-R. Wu**, "Neutrino Production Associated with Late Bumps in Gamma-Ray Bursts and Potential Contribution to Diffuse Flux at IceCube", Astrophys. J. 890, 83 (2020) [arXiv:1911.07568].

35. T. Fischer, G. Guo, A. A. Dzhioev, G. Martínez-Pinedo, **M.-R. Wu**, A. Lohs, Y.-Z. Qian, "Neutrino signal from proto-neutron star evolution: effects of opacities from charged urrent neutrino interactions and inverse neutron decay", Phys. Rev. C 101, 025804 (2020) [arXiv:1804.10890].
36. A. Suliga, I. Tamborra, **M.-R. Wu**, "Tau lepton asymmetry by sterile neutrino emission – Moving beyond one-zone supernova models", JCAP 1912, 019 (2019).
37. J. R. Westernacher-Schneider, E. O'Connor, E. O'Sullivan, I. Tamborra, **M.-R. Wu**, S. M. Couch, F. Malmenbeck, "Multimessenger Asteroseismology of Core-Collapse Supernovae", Phys. Rev. D 100, 123009 (2019) [arXiv:1907.01138].
38. **M.-R. Wu**, P. Banerjee, B. D. Metzger, et. al., "Finding the remnants of the Milky Way's last neutron star mergers", Astrophys. J. 880, 23 (2019) [arXiv:1905.03793].
39. Z. Xiong, **M.-R. Wu**, Y.-Z. Qian, "Active-sterile Neutrino Oscillations in Neutrino-driven Winds: Implications for Nucleosynthesis", Astrophys. J. 880, 81 (2019), [arXiv:1904.09371].
40. A. Sung, H. Tu, **M.-R. Wu**, "New constraint from supernova explosions on light particles beyond the Standard Model", Phys. Rev. D 99, 121305 (2019), [arXiv:1903.07923].
41. **M.-R. Wu**, J. Barnes, G. Martinez-Pinedo, B. D. Metzger, "Fingerprints of heavy element nucleosynthesis in the late-time lightcurves of kilonovae", Phys. Rev. Lett. 122, 062701 (2019) [arXiv:1808.10459].
42. T. Fischer, N.-U. F. Bastian, **M.-R. Wu**, S. Typel, T. Klahn, D. B. Blaschke, "Quark deconfinement as a supernova explosion engine for massive blue supergiant stars", Nature Astronomy 2, 980 (2018) [arXiv:1712.08788].
43. **M.-R. Wu**, I. Tamborra, O. Just, H.-T. Janka, "Imprints of neutrino-pair flavor conversions on nucleosynthesis in ejecta from neutron-star merger remnants", Phys. Rev. D 96, 123015 (2017) [arXiv:1711.00477].
44. **M.-R. Wu**, I. Tamborra, "Fast neutrino conversions: Ubiquitous in compact binary merger remnants", Phys. Rev. D 95, 103007 (2017) [arXiv:1701.06580].
45. S. Rosswog, U. Feindt, O. Korobkin, **M.-R. Wu**, J. Sollerman, A. Goodbar, G. Martinez-Pinedo, "Detectability of compact binary merger macronovae", Class. Quant. Grav. 34, 104001 (2017) [arXiv:1611.09822].
46. M. Frensel, **M.-R. Wu**, C. Volpe, A. Perego, "Neutrino flavor evolution in binary neutron star merger remnants", Phys. Rev. D95, 023011 (2017) [arXiv:1607.05938].
47. M. Heine, S. Typel, **M.-R. Wu** et. al. (R3B collaboration), "Determination of the Neutron-Capture Rate of ^{17}C for the r-process Nucleosynthesis", Phys. Rev. C 95, 014613 (2017) [arXiv:1604.05832].
48. **M.-R. Wu**, R. Fernández, G. Martínez-Pinedo, B. Metzger, "Production of the entire range of r-process nuclides by black hole accretion disk outflow from neutron star mergers", Mon. Not. R. Astron. Soc. 463, 2323 (2016) [arXiv:1607.05290].
49. J. Barnes, D. Kasen, **M.-R. Wu**, G. Martínez-Pinedo, "Radioactivity and thermalization in the ejecta of compact object mergers and their impact on kilonova light curves", Astrophys. J. 829, 110 (2016) [arXiv:1605.07218].
50. **M.-R. Wu**, H. Duan, and Y.-Z. Qian, "Physics of neutrino flavor transformation through matter-neutrino resonances", Phys. Lett. B 752, 89 (2016) [arXiv:1509.08975].

51. R. Knobel et. al., "First direct mass measurements of stored neutron-rich ^{129,130,131}Cd isotopes with FRS-ESR", Phys. Lett. B 754, 288 (2016).
52. J. Mendoza-Temis, **M.-R. Wu**, K. Langanke, G. Martínez-Pinedo, A. Bauswein, and H.-T. Janka, "Nuclear robustness of the r process in neutron-star mergers", Phys. Rev. C 92, 055805 (2015) [arXiv:1409.6135].
53. **M.-R. Wu**, Y.-Z. Qian, G. Martínez-Pinedo, T. Fischer and L. Huther, "Effects of neutrino oscillations on nucleosynthesis and neutrino signals for an 18 M supernova model", Phys. Rev. D 91, 065016 (2015), [arXiv:1412.8587].
54. **M.-R. Wu**, T. Fischer, L. Huther, G. Martínez-Pinedo and Y.-Z. Qian, "Impact of active-sterile neutrino mixing on supernova explosion and nucleosynthesis", Phys. Rev. D 89, 061303 (2014) [arXiv:1305.2382].
55. J. F. Cherry, **M.-R. Wu**, J. Carlson, H. Duan, G. M. Fuller and Y.-Z. Qian, "Neutrino luminosity and matter-Induced modification of collective neutrino flavor oscillations in supernovae", Phys. Rev. D 85, 125010 (2012) [arXiv:1109.5195].
56. J. F. Cherry, **M.-R. Wu**, J. Carlson, H. Duan, G. M. Fuller and Y.-Z. Qian, "Density fluctuation effects on collective neutrino oscillations in O-Ne-Mg core-collapse supernovae", Phys. Rev. D 84, 105034 (2011) [arXiv:1108.4064].
57. **M.-R. Wu** and Y.-Z. Qian, "Resonances driven by a neutrino gyroscope and collective neutrino oscillations in supernovae", Phys. Rev. D 84, 045009 (2011) [arXiv:1105.2068].

Publications under peer-review

1. M. George, Z. Xiong, **M.-R. Wu**, C.-Y. Lin, "Evolution and the quasistationary state of collective fast neutrino flavor conversion in three dimensions without axisymmetry", submitted to PRD [arXiv:2409.08833].
2. Z. Xiong, **M.-R. Wu**, M. George, C.-Y. Lin, "Robust integration of fast flavor conversions in classical neutrino transport", submitted to PRL [arXiv:2403.17269].

Conference proceedings

1. F.-K. Thielemann, B. Wehmeyer, **M.-R. Wu**, "r-Process Sites, their Ejecta Composition, and their Imprint in Galactic Chemical Evolution", J.Phys.Conf.Ser. 1668 (2020) 1, 012044.
2. S. Nikas, G. Martínez-Pinedo, **M.-R. Wu**, A. Sieverding, M. P. Reiter, "Exploring the astrophysical conditions for the creation of the first r-process peak, and the impact of nuclear physics uncertainties" HNPS Advances in Nuclear Physics 27, 175 (2020).
3. T. Marketin, A. Sieverding **M.-R. Wu**, N. Paar, G. Martinez-Pinedo, "Microscopic calculations of β-decay Rates for r-process". Acta Phys. Polon. B48, 641 (2017).
4. S.A. Giuliani, G. Martinez-Pinedo, L.M. Robledo **M.-R. Wu** "r-process Calculations with a Microscopic Description of the Fission Process". Acta Phys. Polon. B48, 299 (2017).
5. T. Marketin, A. Sieverding **M.-R. Wu**, N. Paar, G. Martinez-Pinedo, "Beta-delayed neutron emission in Neutron-Rich Nuclei". JPS. Conf. Proc. 14, 020605 (2017).

6. J. Mendoza-Temis, **M.-R. Wu**, K. Langanke, G. Martinez-Pinedo, A. Bauswein, H.-T. Janka, and A. Frank, "On the robustness of the r-process in neutron-star mergers against variations of nuclear masses". J. Phys. Conf. Ser. 730, 012018 (2016).
7. **M.-R. Wu**, G. Martínez-Pinedo, and Y.-Z. Qian, "Linking neutrino oscillations to the nucleosynthesis of elements", EPJ Web Conf. **109**, 06005 (2016) [arXiv:1512.03630]

Contribution to Book Chapter

1. G. Martínez-Pinedo, T. Fischer, K. Langanke, A. Lohs, A. Sieverding, and **M.-R. Wu** "Neutrinos and their Impact on Core-collapse Supernova Nucleosynthesis", "Handbook of Supernvoae", edited by A. W. Alsabti and P. Murdin, Springer (2017).

Presentations

Invited conference/workshop talks

1. "Neutrino osciillations and Nucleosynthesis of Heavy Elements",
   09/2024, The 17th International Symposium on Origin of Matter and Evolution of Galaxies (OMEG2024), Chengdu, China.
2. "Core-collapse Supernova Neutrinos",
   08/2024, Multi-messenger Transients from Binary Mergers & Stellar Explosions Workshop, Aspen Center for Physics, Aspen, USA.
3. "Supernova Neutrinos – within the Standard Model and beyond",
   06/2024, JUST: Japan-US-Taiwan Particle Physics Workshop, NTU, Taipei, Taiwan.
4. "Impact of neutrinos and nucleosynthesis in modeling mergers and kilonovae",
   05/2024, HEAVYMETAL Consortium Meeting Spring 2024: Understanding r-process element formation in neutron star mergers, Paralia, Greece.
5. "Supernova Neutrinos – within the Standard Model and beyond",
   02/2024, International Symposium on Neutrino Physics and Beyond (NPB 2024), HKUST-IAS, Hong Kong, China.
6. "Neutrinos in astrophysical explosions: collective flavor oscillations and role of neutrino annihilation",
   12/2023, Workshop on Interstellar and intergalactic insights: exploring the energetic Universe with multi-messengers, NTNU, Taipei, Taiwan.
7. "Nuclear emission of gamma-rays from kilonovae and their remnants",
   12/2023, Workshop on "Megavolt Sky Astronomy", ISSI, Bern, Switzerland.
8. "Neutrinos in astrophysical explosions",
   11/2023, International Symposium on Cosmology and Particle Astrophysics, CUHK, Hong Kong, China.
9. "Annihilation of neutrinos in stellar explosions",
   08/2023, 27th International Summer Institute on Phenomenology of Elementary Particle Physics and Cosmology, Sun-Link-Sea, Nantou, Taiwan.
10. "Probing physics beyond the Standard Model with supernovae",
    07/2023, The 3rd New Physics Opportunities at Neutrino Facilities Workshop: Astrophysical Neutrinos, SLAC, USA.
11. "Searching for Afterglow: light DM boosted by supernova neutrinos",
    06/2023, The 1st workshop on Boosted Dark Matter (BDM2023), IBS, Daejeon, Korea.
12. "Neutrinos in astrophysical explosions",
    06/2023, XVI International Conference on Interactions between Particle Physics and Cosmology, IBS, Daejeon, Korea.
13. "Simulations of fast flavor conversions and collisional flavor instability",
    05/2023, Collective Neutrino Oscillations: from Quantum Information Science to Heavy Element Synthesis, MITP, Mainz, Germany.
14. "Collective neutrino oscillations in supernovae – recent developments",

04/2023, The 2nd CCAST workshop on the JUNO related theory and phenomenology: Supernova Neutrinos, CCAST, Beijing, China.

15. "Neutrinos: connecting particle physics with astrophysics",
    01/2023, 2023 Annual Meeting of the Physics Society of Taiwan, NCKU, Tainan, Taiwan.
16. "New understanding in neutrino flavor oscillations and annhiliations in astrophysical explosions",
    12/2022, Mini-Workshop on Highlights of 2022, NCTS, NTU, Taipei, Taiwan,
17. "Supernova neutrinos: probing physics within and beyond the Standard Model",
    12/2022, The 16th International Workshop on the Dark Side of the Universe, Sydney, Australia.
18. "Supernova neutrinos, their flavor oscillations, and implications to light and exotic particles",
    08/2022, The 15th Asia Pacific Physics Conference (remote), Seoul, Korea.
19. "Production of heavy elements in neutron star mergers",
    08/2022, The 15th Asia Pacific Physics Conference (remote), Seoul, Korea.
20. "R-process nucleosynthesis in compact GW objects"
    07/2022, Origin of Elements and Cosmic Evolution: From Big-Bang to Supernovae and Mergers, (virtual) Beijing, China.
21. "Neutrinos in supernovae and binary neutron star mergers"
    06/2022, Neutrino 2022, (virtual) Seoul, Korea.
22. "Supernovae as astrophysical laboratories for fundamental physics"
    01/2022, NCTS Theoretical Physics Symposium, 2022 TPS Annual Meeting, Taipei, Taiwan.
23. "Collective fast neutrino flavor oscillations"
    12/2021, NCTS Annual Theory Meeting, NCTS, Taipei, Taiwan.
24. "Finding the remnants of the Milky Way's last neutron star mergers"
    10/2021, INT Program: Radionuclides: Nuclear Physics, Astrophysical Models, and Observations (hybrid), Seattle, Washington, USA.
25. "Particle astrophysics in supernovae and neutron star mergers"
    10/2021, AAPPS-DACG Workshop 2021 on Astrophysics, Cosmology and Gravitation (remote), APCTP, Korea.
26. "r-process nucleosynthesis in neutron star mergers: theory uncertainties and observables"
    09/2021, The 16th International Symposium on Nuclei in the Cosmos (hybrid), China.
27. "r-process nucleosynthesis in neutron star mergers and kilonovae"
    12/2020, KAGRA International Workshop (hybrid), NCU, Taoyuan, Taiwan.
28. "Probing Light Particles Beyond the Standard Model with Supernovae and Cosmic Rays"
    12/2020, NCTS Annual Theory Meeting, NCTS, Hsinchu, Taiwan.
29. "Review of astrophysical constraints on the axion"
    06/2020, Rapid Response Workshop on New XENON1T Result, ASIoP, Taiwan.

30. "Supernova and compact object neutrinos",
11/2019, Cosmic Neutrinos and Multi-messenger Workshop "CosNuMM2019", Tsung-Dao Lee Institute, Shanghai, China.
31. "A new constraint on light bSM particles with supernovae",
10/2019, Intensity Frontier in Particle Physics: Flavor, CP Violation and Dark Physics, NTU & NTHU, Taiwan.
32. "Heavy element nucleosynthesis in neutron star mergers and kilonovae",
10/2019, 2019 TGWG Conference, Tamkang U & NTNU, Taipei, Taiwan.
33. "Exploring particle and nuclear physics with supernovae and neutron star mergers",
06/2019, 2019 ASIoP mini-workshop, Institute of Physics, Academia Sinica, Taipei, Taiwan.
34. "The birth and death of neutron stars: particle physics imprints on the multimessenger observables",
06/2019, The thirteenth particle physics phenomenology workshop, NTNU, Taipei, Taiwan.
35. "r-process nucleosynthesis and kilonovae",
03/2019, International Molecule-type Workshop "Nucleosynthesis and electromagnetic counterparts of neutron-star mergers: Preparation for the new discovery", YITP, Kyoto University, Japan.
36. "Neutrino and nucleosynthesis in core-collapse supernovae"
02/2019, Supernova workshop in CUHK, CUHK, Hong Kong, China.
37. "Dark physics confronting supernovae"
12/2018, 5th International Workshop on Dark Matter, Dark Energy and Matter-antimatter Asymmetry, December 28-31, 2018, NCTS & Fo-Guang-Shan, Taiwan
38. "r-process nucleosynthesis and kilonovae"
12/2018, Workshop on Physics at HIAF High-Energy Beam Lines and Nuclear Astrophysics, Beihang University, Beijing, China
39. "r-process nucleosynthesis and kilonovae"
10/2018, The 18^{th} East Asian Numerical Astrophysics Meeting, NCKU, Tainan, Taiwan.
40. "Quark-hadron phase transition in explosion of massive stars"
10/2018, Cross-strait 2018 on Particle Physics and Cosmology, Tamkang University, Taipei, Taiwan.
41. "Particle physics opportunities with hot-and-dense astrophysical environments"
09/2018, Cosmology Frontier in Particle Physics: Astroparticle Physics and Early Universe, NTU, Taipei, Taiwan.
42. "Probing physics at extreme with hot-and-dense astrophysical objects"
09/2018, Taiwanese Theoretical Astrophysics Workshop, ASIAA, Taipei, Taiwan.
43. "Nuclear physics impact on r-process and kilonovae",
06/2018, EMMI Rapid Reaction Task Force: The physics from neutron star mergers at GSI/FAIR, GSI, Darmstadt, Germany.
44. "Nucleosynthesis and neutrino flavor conversions in neutron star mergers"
05/2018, TDLI workshop on the Exploding Universe, SJTU, Shanghai, China.

45. "Fast Neutrino Oscillations and Their Impact in Neutron Star Mergers"
12/2017, NCTS Annual Theory Meeting 2017, NTHU, Hsinchu, Taiwan.
46. "Multi-messenger signals from neutron star mergers",
11/2017, Mini-Workshop on Higgs Physics and Gravitational Waves, NTNU, Taipei, Taiwan.
47. "Multi-messenger aspects of binary neutron star mergers",
11/2017, Mini-workshop on Gravity 2017, NCKU, Tainan, Taiwan.
48. "Supernova Neutrinos: Current Understanding and Future Perspectives",
10/2017, 2017 NCTS Workshop on Dark Matter, Particles and Cosmos, National Dong Hwa University, Hualien, Taiwan,
49. "Role of nuclear physics and neutrinos in the r-process in merger outflows",
08/2017, Observational Signatures of r-process Nucleosynthesis in Neutron Star Mergers, INT-17-2b Workshop, Seattle, USA.
50. "Nucleosynthesis and neutrinos in compact binary mergers",
06/2017, International Symposium on Origin of Matter and Evolution of Galaxies, Daejeon, Korea.
51. "r-process nucleosynthesis in neutron star mergers.",
01/2017, Neutron star mergers: From gravitational waves to nucleosynthesis, International Workshop XLV on Gross Properties of Nuclei and Nuclear Excitations, Hirschegg, Kleinwalsertal, Austria.
52. "Modelling supernova neutrino oscillations",
04/2016, JUNO workshop: neutrino astrophysics, Nanjing, China.
53. "Neutrino properties and impact on nucleosynthesis and core-collapse supernovae",
09/2015, Annual Meeting Matter and Universe, Forschungzentrum Julich, Germany.
54. "On the role of eV-sterile neutrinos in core-collapse supernovae",
06/2015, Neutrinos and Dark Matters in Nuclear Physics 2015, Jyvaskyla, Finland.
55. "Neutrino oscillations and nucleosynthesis of elements",
01/2015, Nuclear Structure and Reactions: Weak, Strange and Exotic, International Workshop XLIII on Gross Properties of Nuclei and Nuclear Excitations, Hirschegg, Kleinwalsertal, Austria.
56. "Sterile neutrinos in supernovae",
05/2014, Shanghai Particle Physics and Cosmology Symposium, Shanghai, China.
57. "Supernova neutrino signals",
05/2013, CNA Inauguration Symposium & Workshop, Shanghai, China.
58. "Neutrino oscillations in supernovae",
06/2012, The 4^{th} International Symposium on Neutrinos and Dark Matter in Nuclear Physics (NDM12), Nara, Japan.

Contributed conference/workshop talks

1. "Neutrinos in astrophysical explosions",
08/2023, 2023 IoP Mini Workshop, ASIoP, Taipei, Taiwan.

2. "Neutrino flavor conversion impact on r-process nucleosynthesis from mergers",
05/2022, The r-process and the nuclear EOS after LIGO-Virgo's third observing run, INT, Seattle, USA.
3. "Supernova constraint on the light dark particles",
09/2021, Workshop on Very Light Dark Matter 2021 (remote), IPMU, Japan.
4. "Long-term simulation of collective fast neutrino flavor conversions",
09/2021, New Directions in Neutrino Flavor Evolution in Astrophysical Systems (remote), INT, USA.
5. "Flavor conversions of neutrinos in neutron star merger remnants",
07/2021, Probing Nuclear Physics with Neutron Star Mergers (remote), ECT*, Italy
6. "Neutron star mergers as the main source of r-process: natal kicks and the inside-out evolution to the rescue",
09/2020, 2020 ASROC Annual Meeting, ASIAA, Taipei, Taiwan.
7. " Supernova explosions of very massive stars as a rare r-process site",
02/2020, 2020 Annual Meeting of the Physical Society of Taiwan, National Pingtung University, Taiwan.
8. "Neutrinos and nucleosynthesis in neutron star mergers and kilonovae",
01/2020, Theory meeting experiment: Particle astrophysics and cosmology, ICISE, Quy Nhon, Vietnam.
9. "r-process nucleosynthesis and kilonovae",
12/2019, APCTP School/Workshop on Gravitational-Wave Cosmology, Institute of Physics, Academia Sinica, Taipei, Taiwan.
10. "Condition for fast flavor conversion in double neutron star merger remnants",
08/2019, NBIA-LANL Neutrino Quantum Kinetics in Dense Environments, NBIA, Copenhagen, Denmark
11. "Supernova neutrinos and nucleosynthesis",
04/2019, Mini-workshop on massive stars, core-collapse supernovae, and nucleosynthesis, Institute of Physics, Academia Sinica, Taipei, Taiwan.
12. "r-process nucleosynthesis yields and their heating rate",
03/2018, First multi-messenger observations of a neutron star merger and its implications for nuclear physics, INT-JINA Symposium INT-18-72R, Seattle, USA.
13. "Neutrino flavor conversion in binary neutron star mergers",
12/2017, International Symposium on Cosmology and Particle Astrophysics, YITP, Kyoto, Japan.
14. "Nucleosynthesis and kilonovae from binary neutron star mergers",
10/2017, Mini-workshop for High-Energy Astrophysics, ASIAA, Taipei, Taiwan.
15. "Nuclear uncertainties on the production of radioactive r-process nuclei",
08/2017, Electromagnetic Signatures of r-process Nucleosynthesis in Neutron Star Binary Mergers, INT Program INT-17-2b, Seattle, USA.
16. "Nucleosynthesis and neutrinos in compact binary mergers",
07/2017, Kavli Summer Program in Astrophysics 2017: Astrophysics with gravitational wave detections, Copenhagen, Denmark.

17. "Nucleosynthesis and the electromagnetic signature of binary neutron star mergers", 05/2017, West-Baltic Meeting on Computational and Theoretical Astrophysics, Sandbjerg Gods, Denmark
18. "Neutrinos and core-collapse supernovae", 10/2016, Danish Astroparticle Physics Meeting, University of Southern Denmark, Odense, Denmark.
19. "r-process nucleosynthesis in compact binary mergers", 09/2016, Brainstorming on compact objects, their equation of state, related explosive events, and their nucleosynthesis, Basel University, Basel, Switzerland.
20. "r-process nucleosynthesis in compact binary mergers.", 03/2016, 18$^{\text{th}}$ Workshop on Nuclear Astrophysics, Ringberg Castle, Germany.
21. "r-process nucleosynthesis in neutron star mergers.", 01/2016, NAVI Physics Days, GSI, Darmstadt, Germany.
22. "Neutrino oscillations and supernova nucleosynthesis", 10/2015, HIC for FAIR PAC meeting, GSI, Darmstadt, Germany.
23. "Linking neutrino oscillations to the nucleosynthesis of elements", 06/2015, The 13$^{\text{th}}$ International Symposium on Origin of Matter and Evolution of Galaxies, Beijing, China.
24. "Neutrino oscillations and nucleosynthesis of elements", 03/2015, 79$^{\text{th}}$ DPG Annual Meeting, Heidelberg, Germany.
25. "Neutrinos and nucleosynthesis in supernovae", 02/2015, NAVI Physics Days, GSI, Darmstadt, Germany.
26. "Neutrino oscillations in core-collapse supernovae, nucleosynthesis and the neutrino signals", 08/2014, INT Program 14-2b, Nucleosynthesis and Chemical Evolution, INT, Seattle, USA.
27. "Role of active-sterile neutrino mixing in core-collapse supernovae", 07/2014, INT wrokshop 14-56W, The r-process: Status and challenges, INT, Seattle, USA.
28. "Role of active-sterile neutrino mixing in core-collapse supernovae", 04/2014, 17$^{\text{th}}$ Workshop on Nuclear Astrophysics, Ringberg Castle, Germany.
29. "Light sterile neutrinos in core-collapse supernovae", 03/2014, 78$^{\text{th}}$ DPG Annual Meeting, Frankfurt, Germany.
30. "Neutrinos and explosive nucleosynthesis in core-collapse supernovae", 12/2013, NAVI meeting, GSI, Darmstadt, Germany.
31. "Sterile neutrinos and nucleosynthesis in core-collapse supernovae", 12/2013, MASCHE meeting, TU-Darmstadt, Darmstadt, Germany.
32. "Neutrino oscillations in core-collapse supernovae", 10/2013, Workshop of Supernovae and Gamma-Ray Bursts 2013, Kyoto, Japan.
33. "Light sterile neutrinos in supernovae", 09/2013, International School of Nuclear Physics, 35th Course, Neutrino Physics : Present and Future, Erice-Sicily, Italy.

34. "Neutrino oscillations in core-collapse supernovae",
    03/2013, 77$^{\text{th}}$ DPG Annual Meeting, Dresden, Germany.
35. "Collective neutrino oscillations in a dynamic supernova environment",
    02/2012, Topical Collaboration Meeting for Neutrinos and Nucleosynthesis in hot and dense matter, San Diego, U.S.A.

Seminar/colloquium talks

1. "Modeling neutrino flavor oscillations in supernovae: decoherence, coarse graining, and effective model"
   09/2024, NTU Physics Seminar, NTU, Taipei, Taiwan.
2. "Developments toward including neutrino flavor oscillations in astrophysical simulations"
   09/2024, NTHU HEP Seminar, NTHU, Hsinchu, Taiwan.
3. "Supernova Neutrinos – within the Standard Model and beyond",
   06/2024, Seminar, Department of Physics, NCU, Taoyuan, Taiwan.
4. "Supernova Neutrinos – within the Standard Model and beyond",
   05/2024, Seminar, Institute of Physics, NYCU, Hsinchu, Taiwan.
5. "Supernova Neutrinos – within the Standard Model and beyond",
   05/2024, Seminar, LeCosPA, NTU, Taipei, Taiwan.
6. "Astrophysical explosions as laboratories for fundamental physics",
   11/2023, Physics colloquium, Tunghai University, Taichung, Taiwan.
7. "Annihilation of neutrinos in stellar explosions",
   09/2023, HEP seminar, NTU, Taipei, Taiwan.
8. "Neutrino annihilation in collapsars as source of high-energy neutrinos and r-process nuclei"
   03/2023, NCTS/CTC/NTHU HEP Seminar, NTHU, Hsinchu, Taiwan.
9. "Core-collapse supernova as a laboratory for fundamental physics"
   02/2023, KIAS HEP Seminar, KIAS (remote), South Korea.
10. "Signature of collapsars as sources for high-energy neutrinos and r-process nuclei"
    12/2022, ASIAA Lunch Talk, ASIAA, Taipei, Taiwan.
11. "Neutrinos in core-collapse supernova explosions"
    07/2022, Space Science at Drop Tower Seminar (remote), ZARM, Bremen, Germany.
12. " Neutrinos in core-collapse supernovae and in neutron star mergers"
    06/2022, GPPU Seminar (remote), Tohoku University, Sendai, Japan.
13. "Nucleosynthesis of heavy elements in binary neutron star mergers"
    05/2022, Colloquium, Institute of Physics, NYCU, Hsinchu, Taiwan.
14. "Collective fast neutrino flavor oscillations"
    10/2021, HEP seminar, NTU, Taipei, Taiwan.
15. "Finding the remnants of the Milky Way's last neutron star mergers"
    09/2021, GRAMS Collaboration Meeting 2021.
16. "Neutron star mergers and the r-process nucleosynthesis"
    06/2021, Astroparticle Seminar (remote), NBIA, Copenhagen, Denmark

17. "Recent progress in understanding the origin of heavy elements"
    05/2021, IoA Colloquium, NTHU, Hsinchu, Taiwan
18. "Probing Light Particles Beyond the Standard Model with Supernovae and Cosmic Rays"
    12/2020, Seminar (remote), Northeastern University, Shenyang, China.
19. "Collective neutrino flavor oscillations"
    12/2020, Seminar, NTU, Taipei, Taiwan.
20. "Finding the origin of heavy elements and exploring the nature of dense matter"
    10/2020, Physics Colloquium, NTU, Taipei, Taiwan.
21. "Fast neutrino flavor conversion, ejecta properties, and nucleosynthesis in newly-formed hypermassive remnants of neutron-star mergers"
    10/2020, Collective oscillations exchange journal club (remote), MPP, Germany.
22. "Finding the origin of elements and exploring the nature of dense matter: challenges and opportunities"
    10/2020, Seminar, Graduate Institute of Applied Physics, NCCU, Taipei, Taiwan.
23. " The r-process nucleosynthesis, kilonovae, and some nuclear physics aspects",
    09/2020, Seminar (remote), SJTU, Shanghai, China.
24. "Probing particle physics with astrophysics",
    09/2020, Physics Seminar, NTNU, Taipei, Taiwan.
25. "The r-process nucleosynthesis: challenges and quests after GW170817",
    08/2020, Center of Astronomy and Gravitation Seminar, NTNU, Taiwan.
26. "The r-process nucleosynthesis: challenges and quests after GW170817",
    08/2020, Astrophysics Colloquium (remote), Radboud University, Nijmegen, Netherlands.
27. "Hadron-quark phase-transition in core-collapse supernovae",
    06/2020, online QCD seminar (remote), KEK-YITP-Kaio, Japan.
28. "Probing High-Energy Light Dark Matter with IceCube",
    05/2020, HEP Seminar, NCTU, Hsinchi, Taiwan.
29. "Probing High-Energy Light Dark Matter with IceCube",
    05/2020, Brookhaven HET virtual seminar (remote), BNL, NY, USA.
30. "Exploring physics at the extreme with particle- and nuclear-astrophysics"
    05/2020, Physics Olympiad Training Camp, NTNU, Taipei, Taiwan.
31. "Probing High-Energy Light Dark Matter with IceCube",
    05/2020, HEP seminar, NTU, Taipei, Taiwan.
32. "Production and impact of sterile neutrinos in core-collapse supernovae",
    11/2019, NCTS/NTHU Joint HEP Seminar, NTHU, Hsinchu, Taiwan.
33. "Hard X-ray excess from nearby neutron stars",
    10/2019, Journal Club talk, ASIoP, Taipei, Taiwan.
34. "Finding the remnants of the Milky Way's last neutron star mergers",
    07/2019, Lunch Talk, ASIAA, Taipei, Taiwan.

35. "Finding the origin of elements and exploring the nature of dense matter: challenges and opportunities",
    03/2019, Colloquium, Institute of Physics, Academia Sinica, Taipei, Taiwan.
36. "Supernovae and neutron stars – explore physics at the extreme",
    11/2018, Physics Colloquium, NDHU, Hualien, Taiwan.
37. "The Gold mine of the universe: r-process nucleosynthesis in explosive astrophysical events"
    05/2018, IoA Colloquium, NTHU, Hsinchu, Taiwan
38. "Neutrinos: a key agent in the cosmos and messenger of extreme physics",
    05/2018, Colloquium, Department of Physics, FJU, New Taipei, Taiwan.
39. "Explore physics at extreme conditions: Signals from core-collapse supernovae and neutron star mergers"
    04/2018, Colloquium, Physics Department, NCKU, Tainan, Taiwan
40. " Quark-hadron phase transition in dying massive stars and its signature"
    04/2018, NCTS-NTHU Seminar, NTHU, Hsinchu, Taiwan
41. "Neutrino flavor oscillations in astrophysical explosions – understanding and implications"
    03/2018, CYCU HEP Seminar, CYCU, Chongli, Taiwan
42. "The Gold mine of the universe: r-process nucleosynthesis in explosive astrophysical events"
    01/2018, IAC Colloquium, NCU, Chongli, Taiwan
43. "Explore physics in extreme conditions: core-collapse supernovae and neutron star mergers"
    12/2017, Colloquium, Physics Department, Tamkang University, Taipei, Taiwan
44. "Neutrino oscillations in energetic astrophysical explosions: a strong coupling system"
    11/2017, NCTU High Energy Physics Seminar, Institute of Physics, NCTU, Taiwan
45. "The Gold mine of the universe: r-process nucleosynthesis in explosive astrophysical events"
    11/2017, ASIAA Colloquium, ASIAA, Taipei, Taiwan
46. "Supernova neutrinos: what do we know and what may we learn?"
    10/2017, LeCosPA Cosmology and Particle Astrophysics Seminar, National Taiwan University, Taipei, Taiwan
47. "Neutrino flavor oscillations in compact astrophysical object: a strong coupling problem driven by weak interaction"
    09/2017, HEP Seminar, Department of Physics, National Taiwan Normal University, Taiwan
48. "Neutron star mergers: an informal discussion on the multi-messenger aspects"
    09/2017, HETG Journal Club, Institute of Physics, Academia Sinica, Taiwan
49. "Compact binary mergers: the gold mine of the universe and the electromagnetic signals"
    01/2017, N-talk, NBIA, Copenhagen University, Denmark
50. "Neutrino flavor transformation in neutrino-dense astrophysical environments"
    09/2016, Astroparticle seminar, NBIA, Copenhagen University, Denmark

51. "Neutrino oscillations in dense neutrino environments",
07/2016, Theory Seminar, Laboratoire APC, Université Paris Diderot, Paris, France.
52. "Neutrinos: a key agent in the cosmos",
06/2016, Physics Colloquium, Institute of Physics, Academia Sinica, Taipei, Taiwan.
53. "Neutrino flavor oscillations in supernovae and in neutron star mergers",
04/2016, Theoretical Physics Division Seminar, Institute of High Energy Physics, Chinese Academy of Science, Beijing, China.
54. "Neutrino oscillations in dense neutrino environments and its astrophysical/cosmological implications",
03/2016, High Energy Theory Journal Club, Institute of Physics, Academia Sinica, Taipei, Taiwan.
55. "Sterile neutrinos in the early Universe and core-collapse supernovae",
07/2015, Study group on neutrino and nuclear physics for nucleosynthesis and chemical evolution, Shanghai Jiao Tong University, Shanghai, China.
56. "Neutrino oscillations and nucleosynthesis of elements",
03/2015, T-2 theory seminar (remote), LANL, USA.
57. "Neutrino oscillations and nucleosynthesis of elements",
02/2015, Nuclear physics seminar, NSCL, Michigan State University, East Lansing, USA.
58. "Neutrino oscillations in core-collapse supernovae",
12/2014, Physics Seminar, University of Zagreb, Zagreb, Croatia.
59. "Neutrino oscillations in core-collapse supernovae",
03/2014, SFB Nuclear Structure Week, TU-Darmstadt, Darmstat, Germany.
60. "The impact of neutrino oscillations on supernova explosion, nucleosynthesis, and the neutrino signals",
10/2013, Nuclear, Particle, and Astrophysics Seminar, Basel University, Basel, Switzerland.
61. "Neutrino oscillations in core-collapse supernovae",
01/2013, Lunch Club Seminar, TU Darmstadt. Darmstadt, Germany.
62. "Collective flavor oscillations of the neutronization neutrino burst from O-Ne-Mg supernovae",
10/2011, Nuclear Physics Seminar, University of Minnesota, Minneapolis, U.S.A.
63. "Resonances and spectral splits of collective neutrino oscillations in supernovae",
06/2011, Doctoral Training Program Seminar, ECT*, Trento, Italy.
64. "Multi-angle treatment of neutrino oscillations in supernovae",
03/2011, Nuclear Physics Seminar, University of Minnesota, Minneapolis, U.S.A.
65. "Spectral dependence of collective neutrino oscillations in supernovae",
12/2010, Nuclear Physics Seminar, University of Minnesota, Minneapolis, U.S.A.
66. "Collective oscillations and spectral splits of supernova neutrinos",
03/2010, Cosmology and High Energy Astrophysics Seminar, University of Minnesota, Minneapolis, U.S.A.
67. "Spectral splits of supernova neutrinos",
11/2009, Nuclear Physics Seminar, University of Minnesota, Minneapolis, U.S.A.

Lectures in Schools

1. " Heavy element nucleosynthesis in astrophysical explosions"
   08/2023, Nuclear Physics School For Young Scientists (NUSYS-2023), Fudan University, Shanghai, China.
2. "Selected topics in nuclear and particle astrophysics"
   07/2021, NCTS-TCA Summer Student Program 2021 (remote), Taiwan.
3. "Neutrino Astronomy",
   07/2018, PIRE-GEMADARC Summer School Sichuan University, Chengdu, China.
4. "Neutrino Oscillations – Theory",
   07/2018, PIRE-GEMADARC Summer School Sichuan University, Chengdu, China.
5. "The r-process nucleosynthesis in neutron star mergers and the kilonovae",
   03/2018, School/Workshop on Recent Developments in Gravitational Waves and Astrophysics, ASIoP, Taiwan.

Public Talks

1. "The birth and death of neutron stars – core-collapse supernova explosions and binary neutron star mergers",
   03/2021, Taipei Astronomical Museum, Taipei, Taiwan.
2. "Supernovae and neutron stars – explore physics at the extreme",
   10/2018, Academia Sinica Open Day, Institute of Physics, Academia Sinica, Taipei, Taiwan.