

## Theoretical Nuclear Physics Laboratory

### Publications

#### [Journal]

(Original Papers) \*Subject to Peer Review

- Nakatsukasa T.: “Finite amplitude method in linear response TDDFT calculations”, *Journal of Physics: Conference Series* **533**, 012054 (2014). \*
- Matsuo M., Hinohara N., Sato K., Matsuyanagi K., Nakatsukasa T., and Yoshida K.: “Quadrupole shape dynamics from the viewpoint of a theory of large-amplitude collective motion”, *Phys. Scr.* **89**, 054020 (2014). \*
- Inakura T., Horiuchi W., Suzuki Y., and Nakatsukasa T.: “Mean-field analysis of ground state and low-lying electric dipole strength in  $^{22}\text{C}$ ”, *Phys. Rev. C* **89**, 064316 (2014). \*
- Ebata S., Nakatsukasa T., and Inakura T., : “Systematic investigation of low-lying dipole modes using the canonical-basis time-dependent Hartree-Fock-Bogoliubov theory”, *Phys. Rev. C* **90**, 024303 (2014). \*
- Sihver L., Kohama A., Iida K., Oyamatsu K., Hashimoto S., Iwase H., and Niita K.: “Current status of the “Hybrid Kurotama model” for total reaction cross sections”, *Nucl. Instrum. Meth. B* **334**, 34–39 (2014). \*
- Sihver L., Lantz M., Kohama A., “Improved parametrization of the transparency parameter in Kox and Shen models of total reaction cross sections”, *Phys. Rev. C* **89**, 067602-1–067602-4 (2014). \*
- Dinh Dang N.: “Thermal pairing and giant dipole resonance in highly excited nuclei”, *J. Phys.: Conf. Series* **580**, 01205-1–01205-6 (2015). \*
- Dinh Dang N.: “Viscosity: From air to hot nuclei”, *Pramana - journal of physics* **83**, 683–693 (2014). \*
- Rhine Kumar A.K., Arumugam P., Dinh Dang N.: “Pairing effect in thermal shape fluctuation model on the width of giant dipole resonance”, *Phys. Rev. C* **90**, 044308-1 – 044308-6 (2014). \*
- Washiyama K.: “Fusion and quasi-fission in heavy systems with the microscopic time-dependent energy density functional theory”, *EPJ Web Conf.* **86** 00062-1-00062-4 (2015).\*
- Van Giai N., Liang H.Z., Gu H.-Q., Long W.H., and Meng J.: “Treating Coulomb exchange contributions in relativistic mean field calculations: why and how”, *Phys. Scr.* **89** 054008 (2014) \*.
- Liang H.Z., Nakatsukasa T., Niu Z.M., and Meng J.: “Finite-amplitude method: an extension to the covariant density functionals”, *Phys. Scr.* **89**, 054018 (2014) \*.
- Liang H.Z., Meng J., Shen S.H., Van Giai N., Zhang S.Q., Zhang Y., and Zhao P.W.: “Pseudospin symmetry: Recent progress with supersymmetric quantum mechanics”, *Journal of Physics: Conference Series* **533**, 012020 (2014).
- Sheikh J. A., Hinohara N., Dobaczewski J., Nakatsukasa T., Nazarewicz W., and Sato K.: “Isospin-invariant Skyrme energy-density-functional approach with axial symmetry”, *Phys. Rev. C* **89**, 054317-1–054317-12 (2014). \*
- Tanabe K., and Sugawara-Tanabe K.: “Nuclear moment of inertia as an indicator of the phase transition”, *Phys. Rev. C* **91**, 034328 (2015). \*
- Sugawara-Tanabe K., Tanabe K., and Yoshinaga N.: “Analysis of the triaxial, strongly deformed bands in odd-odd nucleus  $^{164}\text{Lu}$  with the tops-on-top model”, *Progress of Theoretical and Experimental Physics* **2014**, 063D0 (2014). \*  
(Review)
- Liang H.Z., Meng J., and Zhou S.-G.: “Hidden pseudospin and spin symmetries and their origins in atomic nuclei”, *Physics Reports* **570**, pp. 1–84 (2015). \*

### Oral Presentations

(International Conference etc.)

- Nakatsukasa T.: “Mean-field calculations for IoI”, RIBF Discussion Plus!: Island of Inversion, (RIKEN), Wako, Apr. (2014).
- Nakatsukasa T.: “Nuclear response and equation of state”, APCTP Workshop on the intersection of cold-atomic and nuclear physics, (APCTP), Pohang, Korea, May (2014).
- Nakatsukasa T.: “Nuclear structure studies with energy density functionals”, International workshop on Progress in nuclear shell-model calculations in CNS-RIKEN collaboration, (RIKEN/University of Tokyo), Wako, Nov. (2014).
- Nakatsukasa T.: “Isospin invariant energy density functional and isobaric analogue states”, International Symposium on Physics of Unstable Nuclei 2014, (Institute for Nuclear Science and Technology), Ho Chi Minh City, Vietnam, Nov. (2014).
- Nakatsukasa T.: “Time-dependent density functional calculation of nuclear response functions”, International Conference: Nuclear Theory in the Supercomputing Era - 2014, (Pacific National University), Khabarovsk, Russia, June. (2014).
- Nakatsukasa T.: “Time-dependent approaches to nuclear many-body dynamics”, International Workshop on New Frontier of Numerical Methods for Many-Body Correlations, (University of Tokyo/CMSI), Tokyo, Feb. (2015).
- Makinaga A., Ebata S., Aikawa M., Furutachi N., Ichinkhorloo D., Kato K., Odsuren M., Devi V., Otuka N., Kohama A., Otsu H., and Sakurai H.: “Compilation of Nuclear Reaction Data from RIBF”, 2nd Conference on Advances in Radioactive Isotope Science (ARIS2014), (RIKEN Nishina Center, CNS), Tokyo, Jun. (2014)
- Dinh Dang N.: “Recent achievements in the study of highly excited nuclei: Thermal pairing and giant dipole

- resonance”, International Symposium on Physics of Unstable Nuclei (ISPUN14), (INST and LIA), HoChiMinh City, Nov. (2014).
- Dinh Dang N.: “Effect of thermal fluctuations in the pairing field on the width of giant dipole resonance”, International Workshop on Nuclear Science and Simulation in fundamental and applied researches, (TonDucThang University), HoChiMinh City, Oct. - Nov. (2014).
- Dinh Dang N.: “Recent achievements in the study of thermal pairing and giant resonances in highly excited nuclei”, 2nd International Workshop on Theoretical and Computational Physics, (Institute of Theoretical Physics and Vietnam Physics Society), Buon Ma Thuot, July (2014).
- Dinh Dang N.: “Thermal pairing and giant dipole resonance in highly excited nuclei”, 11th international spring seminar on nuclear physics, (University of Napoli), Ischia, May (2014).
- Washiyama K.: “Microscopic analysis of fusion hindrance in heavy systems”, Advances in Radioactive Isotope Science, (RIKEN/University of Tokyo), Tokyo, Japan, Jun. (2014).
- Washiyama K.: “Fusion hindrance and extra push in fusion reactions with heavy nuclei”, Nuba Conference Series-1: Nuclear Physics and Astrophysics, (Akdeniz University), Antalya, Turkey, Sep. (2014).
- Washiyama K.: “Microscopic analysis of fusion hindrance in heavy systems”, HAWAII 2014: Fourth Joint Meeting of the Nuclear Physics Divisions of the American Physical Society and The Physical Society of Japan, (APS/JPS), Waikoloa, USA, Oct. (2014).
- Washiyama K.: “Fusion hindrance in heavy systems with the time-dependent energy density functional Theory”, The International Symposium on Physics of Unstable Nuclei 2014, (Institute for Nuclear Science and Technology), Ho Chi Minh City, Vietnam, Nov. (2014).
- Washiyama K.: “Microscopic description of extra-push energy and fusion dynamics in heavy systems”, 22nd ASRC International Workshop “Nuclear Fission and Exotic Nuclei”, (JAEA), Tokai, Japan, Dec. (2014).
- Liang H.Z.: “Pseudospin symmetry in nuclear single-particle spectra”, International Workshop: Intersection of Cold-atomic and Nuclear Physics, (Asia Pacific Center for Theoretical Physics), Pohang, South Korea, May (2014).
- Liang H.Z.: “Nuclear Spin-Isospin Excitations — Towards exotic deformed nuclei”, The 2nd Conference: Advances in Radioactive Isotope Science, (RIKEN), Tokyo, Jun. (2014).
- Liang H.Z.: “Nuclear collective excitations in finite amplitude method”, Lectures on Covariant Density Functional Theory in Nuclear Physics, (Shandong University), Weihai, China, Jul. (2014).
- Liang H.Z.: “Nuclear Spin-Isospin Excitations — Towards exotic deformed nuclei”, The 21st International Symposium on Spin Physics, (Peking University), Beijing, China, Oct. (2014).
- Liang H.Z.: “Nuclear Spin-Isospin Excitations — Towards exotic deformed nuclei”, The 15th Chinese National Conference on Nuclear Structure, (Guangxi Normal University), Guilin, China, Oct. (2014).
- Liang H.Z.: “Solving Dirac equations in 3D coordinate space”, International Workshop on Nuclear Science and Simulation in fundamental and applied researches, (Ton DucThang University), Ho Chi Minh, Vietnam, Oct. (2014).
- Liang H.Z., Meng J., and Zhou S.-G.: “Hidden pseudospin and spin symmetries in nuclei”, International Symposium on Physics of Unstable Nuclei, (Institute for Nuclear Science and Technology), Ho Chi Minh, Vietnam, Nov. (2014).
- Liang H.Z.: “Nuclear spin and isospin physics in spin-isospin excitations and single-particle spectra”, Nuclear Physics Seminar in Tsinghua University, (Tsinghua University), Beijing, China, Oct. (2014).
- Liang H.Z.: “Dirac equation in 3D lattice and its application in covariant density functional theory”, Seminar in Physics School, (Anhui University), Hefei, China, Mar. (2015).
- Liang H.Z.: “Supersymmetry and relativistic symmetry in nuclei”, Seminar in School of Physics, (Peking University), Beijing, China, Apr. (2014).
- Liang H.Z.: “Solutions of Dirac equation in 3D lattice”, Seminar in Institute of Theoretical Physics, (Chinese Academy of Sciences), Beijing, China, Apr. (2014).
- Sato K., Dobaczewski J., Nakatsukasa T., and Satula W.: “Isocranking calculation with proton-neutron mixed energy density functionals”, Fourth Joint Meeting of the Nuclear Physics Divisions of the American Physical Society and The Physical Society of Japan (HAWAII 2014), (JPS, APS), Hawaii, Oct. (2014).
- Sato K., Dobaczewski J., Nakatsukasa T., and Satula W.: “Mean-field calculation based on proton-neutron mixed energy density functionals”, 2nd Conference on Advances in Radioactive Isotope Science (ARIS2014), (CNS, University of Tokyo), Tokyo, Jun. (2014).
- (Domestic Conference)
- 中務孝: “原子核密度汎関数理論の概要”, サマースクール「クォークから超新星爆発まで」, (京都大学基礎物理学研究所、計算基礎科学連携拠点、HPCI戦略プログラム分野5「物質と宇宙の起源と構造」), 京都, 7月(2014).
- 中務孝: “核励起と核反応の密度汎関数計算”, 「長寿命核分裂核廃棄物の核変換データとその戦略」ワークショップ, (理研, 和光, 3月(2014).
- 小濱洋央, 飯田圭, 親松和浩, 小浦寛之: “変形核反応における全反応断面積の角度平均の取り方”, 日本物理学会第70回年次大会, 東京, 3月(2015).
- 鷲山広平: “重い反応系における核融合阻害現象の微視的解析”, 日本物理学会年次大会, (日本物理学会), 東京, 3月(2015).

Liang H.Z.: “Hidden pseudospin and spin symmetries in nuclei ’’ , RCNP Nuclear Physics Colloquium, (Osaka University), Osaka, Dec. (2014).

佐藤弘一, Dobaczewski J., 中務孝, Satuła W.: “陽子—中性子混合を含んだ密度汎関数計算”, 千葉大学原子核理論研究室セミナー, (千葉大学原子核理論研究室), 千葉, 5月 (2014).

佐藤弘一, Dobaczewski J., 中務孝, Satuła W.: “Isospin breaking term を入れた陽子—中性子混合密度汎関数計算”, 日本物理学会 第70回年次大会, (日本物理学会), 東京, 3月 (2015).