

### 研究発表

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#### 原著論文

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- 1. W. Horiuchi, Y. Suzuki, "Tests of a deformed core plus few-nucleon model", Few-Body Syst. 55, 121-133 (2014)\*.
- 2. W. Horiuchi, Y. Suzuki, "Correlated-basis description of  $\alpha$ -cluster and delocalized  $0^+$  states in  $^{16}\text{O}$ ", Phys. Rev. C 89, 011304(R) (2014)\*.
- 3. W. Horiuchi, Y. Suzuki, T. Inakura, "Probing neutron-skin thickness with total reaction cross sections", Phys. Rev. C 89, 011601(R) (2014)\*.
- 4. D. Mikami, W. Horiuchi, Y. Suzuki, "Electric dipole response of  $^6\text{He}$ : Halo-neutron and core excitations", Phys. Rev. C 89, 064303 (2014)\*.
- 5. T. Inakura, W. Horiuchi, Y. Suzuki, T. Nakatsukasa, "Mean-field analysis of ground and low-lying electric dipole strength in  $^{22}\text{C}$ " Phys. Rev. C 89, 064316 (2014)\*
- 6. W. Horiuchi, Y. Suzuki, "Harmonic-oscillator excitations of precise few-body wave functions" Phys. Rev. C 90, 034001 (2014)\*
- 7. A. Estrade (W. Horiuchi, M. Kimura) et al., "Proton radii of  $^{12-17}\text{B}$  define a thick neutron radius in  $^{17}\text{B}$ ", Phys. Rev. Lett. 113, 132501 (2014)\*.
- 8. S. Terashima et al. (W. Horiuchi, M. Kimura), "Proton radius of  $^{14}\text{Be}$  from measurement of charge changing cross sections", Prog. Theor. Exp. Phys. 2014, 101D02 (2014)\*.
- 9. M. Takechi (M. Kimura) et al., "Evidence of halo structure in  $^{37}\text{Mg}$  observed via reaction cross sections and intruder orbitals beyond the island of inversion" Phys. Rev. C 90, 061305(2014)\*.
- 10. M. Isaka (M. Kimura) et al., "Superdeformed  $\Lambda$  hypernuclei with antisymmetrized molecular dynamics", Phys. Rev. C 89, 024310 (2014)\*
- 11. S. Watanabe (M. Kimura) et al., "Ground-state properties of neutron-rich Mg isotopes", Phys. Rev. C 89, 044610 (2014)\*.
- 12. B. Zhou et al., "Nonlocalized cluster dynamics and nuclear molecular structure", Phys. Rev. C 89, 034319 (2014)\*.

- 13. B.Zhou, Y.Funaki, A.Tohsaki, H.Horiuchi, Z.Ren, "The container picture with two-alpha correlation for the ground state of  $^{12}\text{C}$ ", Prog. Theor. Exp. Phys. 2014, 101D01 (2014)\*.
- 14. G. Roepke (B. Zhou) et al., "Nuclear clusters bound to doubly magic nuclei: The case of  $^{212}\text{Po}$ " Phys. Rev. C 90, 034304 (2014)\*.
- 15. Y. Chiba, M. Kimura, "Collectivity and instability of the  $N=Z=28$  shell gap and strongly deformed bands with  $g_{9/2}$  configuration in  $^{56}\text{Ni}$ ", Phys. Rev. C 89, 054313 (2014)\*.
- 16. S. Ebata, T. Nakatsukasa, T. Inakura, "Systematic investigation of low-lying dipole modes using the canonical-basis time-dependent Hartree-Fock-Bogoliubov theory" Phys. Rev. C 90, 024303 (2014)\*.
- 17. T. Baba, Y. Chiba, M. Kimura, " $3\alpha$  clustering in excited states of  $^{16}\text{C}$ ", Phys. Rev. C 90, 064319 (2014)\*.

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## 会議抄録等

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- 1. W. Horiuchi, Y. Suzuki, "Tensor correlations probed by electroweak responses", EPJ Web of Conferences 66, 02052 (2014)\*.
- 2. W. Horiuchi, Y. Suzuki, "Unified description of shell and cluster coexistence in  $^{16}\text{O}$  with a five-body model", EPJ Web of Conferences 66, 02053 (2014)\*.
- 3. W. Horiuchi, Y. Suzuki, "Dynamics of nuclear four- and five-body systems with correlated Gaussian method", J. Phys.: Conf. Ser. 569, 012060 (2014)\*.
- 4. 堀内渉, 「第一原理計算による $^4\text{He}$ の光吸収反応の研究」原子核研究, Vol. 57 No.2, p.28-38, March 2014\*
- 5. 原子核研究, Vol.58 Supplement 2, January 2014
  - A. 三上大地, 堀内渉 「相関基底を用いた6核子系の電気双極子励起の研究」
  - B. 畠山慎也, 堀内渉, 江幡修一郎, 木村真明, 「Glauber理論による陽子—原子核散乱の解析」
  - C. 千葉陽平 「反対称分子動力学による2重閉殻 $^{56}\text{Ni}$ における変形共存の研究」
  - D. 木村真明 「中性子魔法数の消失と変形共存」
- 6. S.Hatakeyama, S.Ebata, W.Horiuchi, M.Kimura, "Multiple-scattering effects in proton- and alpha-nucleus reactions with Glauber theory", J.Phys.:Conf.Ser.569, 012050(2014)\*.
- 7. M. Kimura, Y. Chiba, "Clustering aspects in  $N = Z$  nucleus  $^{24}\text{Mg}$  studied by antisymmetrized molecular dynamics", J. Phys.: Conf. Ser. 569 012005 (2014)\*.

- 8. B.Zhou, "Nonlocalized cluster dynamics and container picture", J. Phys.: Conf. Ser. 569, 012007 (2014)\*
- 9. Y. Chiba and M. Kimura, "Study of cluster structure in  $^{13}\text{C}$  with AMD+HON-constraint method", J. Phys. Conf. Ser. 569 012047 (2014)\*.
- 10. S. Imai, H.-X. Chen, H. Toki, L.-S. Geng, "Thermodynamics of hadrons using Gaussian functional method in the linear sigma model", World Scientific pp.49-52 (2014)\*.
- 11. S.Ebata, T.Nakatsukasa, "Pairing effects in Nuclear Fusion Reaction", JPS Conf. Proc. 1, 013038 (2014)\*.

## 学術講演 (国際学会・国際シンポジウム)

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### 招待公演(口頭発表)

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- ? Workshop on Threshold Physics at the Neutron Drip Line, GSI, Darmstadt, Germany, 2014.2.3-7.  
W.Horiuchi\*, "Probing halo and skin structure of unstable nuclei with total reaction cross sections"
- ? 新学術領域研究「ニュートリノフロンティアの融合と進化」研究会「低エネルギーニュートリノ-原子核反応と天体現象への応用」, IPC生産性交流センター, 葉山, 2014.3.5-6.  
W. Horiuchi\*, "Ab-initio few-body calculations for neutrino-nucleus reactions"
- ? The Sixth Asia-Pacific Conference on Few-Body Problems in Physics 2014, Hahndorf, Australia, 2014.4.7-11.  
W. Horiuchi\*, "Correlated-basis approach to nuclear four- and five-body problems"
- ? 3rd International Workshops on "State of the Art of Cluster Physics" (SOTANCP3), KGU Kannai media center, Yokohama, Japan, 2014.5.26-30.  
  
? W.Horiuchi\*, "Dynamics of nuclear four- and five-body systems with correlated Gaussian method"  
? M. Kimura\*, Y. Chiba. T. Baba, "Clustering aspects in  $N=Z$  nucleus  $^{24}\text{Mg}$  studied by antisymmetrized molecular dynamics"  
? B. Zhou\*, "Nonlocalized cluster dynamics and nuclear molecular structure"
- ? TRIUMF theory seminar , TRIUMF, Vancouver, Canada, 2014.8.19  
W. Horiuchi\*, "Correlated-basis description of alpha-cluster and delocalized 0<sup>+</sup> states in  $^{16}\text{O}$ "
- ? International Symposium on Exotic Nuclei "EXON2014", Immanuel Kant Baltic Federal University, Kaliningrad, Russia, 2014.9.8-13.

W. Horiuchi\*, "Probing neutron-skin thickness of unstable nuclei with total reaction cross sections"

- ? Fourth Joint Meeting of the Nuclear Physics Divisions of APS and JPS, Hilton Waikoloa Village, Big Island, Hawaii, 2014.10.7-11.

M. Kimura\*, Y. Chiba, "Formation of clusters in stable and unstable nuclei explored by antisymmetrized molecular dynamics"

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## 一般公演(口頭発表)

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- ? The 2nd Conference on "Advances in Radioactive Isotope Science" (ARIS2014), University of Tokyo, Tokyo, Japan, 2014.06.01-06.

? M. Kimura\*, Y. Taniguchi, Y. Kanada-En'yo, H. Horiuchi and K. Ikeda, "Erosion of N=28 Shell Gap and Triple Shape Coexistence in the vicinity of 44S"

? S. Ebata\*, T. Nakatsukasa, "Repulsive aspects of pairing correlation in nuclear fusion reaction"

- ? The 13th CNS International Summer School, RIKEN, Saitama, Japan, 2014.08.21-27.

? S. Hatakeyama\*, S. Ebata, W. Horiuchi, M. Kimura, "Multiple-scattering effects in nucleus-nucleus collisions with Glauber theory"

? Y. Chiba\*, M. Kimura, "Isoscalar monopole transitions and cluster states in 24Mg"

- ? Workshop on EXFOR compilation, 2014.10.6-10, IAEA, Vienna, Austria,  
D. Ichinkhorloo\*, "Digitization software GSYS"
- ? Fourth Joint Meeting of the Nuclear Physics Divisions of APS and JPS, Hilton Waikoloa Village, Big Island, HI, USA, 2014.10.7-11.

? S. Hatakeyama\*, S. Ebata, W. Horiuchi, M. Kimura, "Multiple-scattering effects in nucleus-nucleus reactions with Glauber theory"

? W. Horiuchi\*, D. Mikami, Y. Suzuki, "Microscopic study of soft and giant dipole resonances in 6He"

? J. Dohet-Eraly\*, P. Navratil, S. Quaglioni, W. Horiuchi, and G. Hupin, "Ab initio study of the 3He( $\alpha$ , $\gamma$ )7Be and 3H( $\alpha$ , $\gamma$ )7Li radiative captures"

? R. Kanungo\* (W. Horiuchi) et al., "Proton radii of neutron-rich B isotopes and neutron surface thickness in 17B"

? M. Kimura\*, Y. Taniguchi, and Y. Kanada-En'yo, "Erosion of N=28 Shell Gap and Triple Shape Coexistence in the vicinity of 44S"

? Y. Chiba\*, M. Kimura, "Instability of N=Z=28 shell closure against quadrupole deformation in 56Ni"

? R. Sekine\*, W. Horiuchi, "Time-dependent approach to the electric dipole response of few-nucleon systems"

? T. Baba\*, Y. Chiba, M. Kimura, "Linear-chain structure of alpha clusters in Carbon isotopes"

- ? International Symposium on Physics of Unstable Nuclei 2014, Ho Chi Minh City, Vietnam, 2014.11.3-8.  
M. Kimura\*, Y. Chiba, "Clusters in N=Z nuclei proved by isoscalar monopole transitions"
- ? Conference on Cluster Structure of Unstable Nuclei and Its Decay, Nanjing Univ., Nanjing, China, 2014.12.01-04.  
Y. Chiba\*, M. Kimura, "Cluster and Collective excitations of  $^{24}\text{Mg}$ "

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## 一般公演(ポスター発表)

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- ? SOTANCP3, KGU Kannai media center, Yokohama, Japan, 2014.05.26-30.  
  
? S. Hatakeyama\*, S. Ebata, W. Horiuchi, M. Kimura, "Multiple-scattering effects in proton- and alpha-nucleus reactions with Glauber theory"  
? Y. Chiba\*, M. Kimura, "Collectivity and instability of the N=Z=28 shell gap in  $^{56}\text{Ni}$ "  
? Y. Chiba\*, M. Kimura, "Study of cluster structure in  $^{13}\text{C}$  with AMD+HON-constraint method"
- ? ARIS2014, University of Tokyo, Tokyo, Japan, 2014.06.01-06  
  
? S. Hatakeyama\*, S. Ebata, W. Horiuchi, M. Kimura, "Multiple-scattering effects in high energy nucleus-nucleus collisions"  
? W. Horiuchi\*, T. Inakura, T. Nakatsukasa, and Y. Suzuki, "Systematic analysis of total reaction cross sections of unstable nuclei with Glauber model"  
? W. Horiuchi\*, Y. Suzuki, and T. Inakura, "Probing neutron-skin thickness of unstable nuclei with total reaction cross sections"  
? T. Inakura\*, W. Horiuchi, Y. Suzuki, and T. Nakatsukasa, "Mean-field analysis of ground state and low-lying electric dipole strength in  $^{22}\text{C}$ "  
? T. Neff\*, H. Feldmeier, W. Horiuchi, D. Weber, "Studying short-range correlations and momentum distributions with unitarily transformed interactions and operators"  
? Y. Chiba\*, M. Kimura, "Collectivity and instability of the N=Z=28 shell gap in  $^{56}\text{Ni}$ "  
? S. Ebata\*, M. Kimura, "Quenching of N=28 shell gap and a novel type of low-lying quadrupole mode in the vicinity of neutron-rich N=28 isotone"  
? T. Baba\*, Y. Chiba, M. Kimura, "Linear Chain of Alpha Clusters in  $^{16}\text{C}$ "  
? M. Kimura\*, "Neutron Halos in the Vicinity of the Island of Inversion"

## 学術講演 (国内学会・国内その他)

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## 招待公演(口頭発表)

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- ? 「ab initio 核多体問題ワークショップ」, 京大基研, 京都市, 2014年2月10-11日  
堀内渉\*, 「相関基底による少数多体系核物理の最近の進展と課題」

- ? The first RIBF Discussion Plus!," RIKEN, Saitama Japan, 2014年4月25日  
M. Kimura\*, "Island of Inversion studied by antisymmetrized molecular dynamics"
- ? 2014年度核データ研究会, 北海道大学, 2014年11月27日  
木村真明\*, 「反対称化分子動力学によるクラスター現象の研究」
- ? 大阪大学核物理研究センターセミナー, RCNP, 茨木市, 2014年9月7日  
木村真明\*, "Evolution of clusters in N=Z nuclei and isoscalar monopole transitions as a probe"
- ? RIBF核物理セミナー, RIKEI, Saitama, Japan, 2014年11月25日  
堀内渉\*, "Correlated-basis approach to nuclear five- and six-body problems"
- ? 京都大学原子核理論研究室核子多体論セミナー, 京大基研, 京都市, 2014年12月12日  
千葉陽平\*, 「反対称分子動力学で探る励起状態のクラスター構造」

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## 一般公演(口頭発表)

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- ? 第26回 北海道原子核理論グループ研究会 (北海道大学, 北海道, 2014.02.20-22)
  - ? 畠山慎也\*, 江幡修一郎, 堀内渉, 木村真明, 「Glauber理論による原子核—原子核散乱の研究」
  - ? 千葉陽平\*, 「56Niにおける集団性とN=Z=28シェルギャップの不安定性」
  - ? 馬場智之\*, 千葉陽平, 木村真明, "Linear-chains of alpha clusters in neutron-rich Carbon isotopes"
- ? 第12回北大シミュレーション・サロン・ワークショップ, 北海道大学, 北海道, 2014.03.14.
  - 畠山慎也\*, 江幡修一郎, 堀内渉, 木村真明, 「Glauber模型における多重積分の評価～高エネルギー反応への応用～」
- ? 日本物理学会第69回年次大会, 東海大学湘南キャンパス, 2014.3.27-30.
  - ? 畠山慎也\*, 江幡修一郎, 堀内渉, 木村真明, 「原子核—原子核散乱における多重散乱の効果とその標的核依存性」
  - ? 堀内渉\*, 鈴木宜之, 稲倉恒法, 「全反応断面積で探る不安定核のスキン厚」
  - ? 古本猛憲\*, 堀内渉, 山本安夫, 「密度行列を用いた4He-4He 散乱の記述II」
  - ? 木村真明\*, "Coupling of (deformed) core and weakly bound neutron"
  - ? 千葉陽平\*, 木村真明, 「13Cにおける鎖状クラスター構造の研究」
  - ? 江幡修一郎\*, 「異種核衝突における対相関の効果について」
- ? 第60回 原子核三者若手夏の学校, パノラマランド木島平, 長野, 2015年8月4-9日
  - ? 関根里英\*, 堀内渉, 「時間依存方程式による3核子系の電気双極子応答の研究」
  - ? 馬場智之\*, 千葉陽平, 木村真明, "Linear-chain structure of alpha clusters in carbon isotopes"
- ? 第27回 北海道原子核理論グループ研究会 (北海道大学, 北海道, 2014.11.19-21)
  - ? 畠山慎也\*, 江幡修一郎, 堀内渉, 木村真明, "Evaluation of Multiple-Scattering effects in Glauber theory"

? 千葉陽平\*, 木村真明, "Cluster excitations in  $^{24}\text{Mg}$ "

? 関根里英\*, 堀内渉, 「時間依存方程式と基底関数展開による電気双極子応答の研究」

? 馬場智之\*, 千葉陽平, 木村真明, "Linear-chains of alpha clusters in neutron-rich carbon isotopes"

? S. Imai\* et al., "Linear sigma model at finite temperature using Gaussian functional method"

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## 一般公演(ポスター発表)

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- ? 2014 Symposium on Nuclear Data, Hokkaido Univ., Hokkaido, Japan, 2014.11.27-28.
  - ? A. Sarsembaeva\*, "A new EXFOR editor system: Java version of HENDEL".
  - ? R. Sekine\*, W. Horiuchi, "Evaluation of the photoabsorption cross section of three-nucleon systems"
  - ? B.Zhou\*, "The container picture with two-alpha correlation for the ground state of  $^{12}\text{C}$ "
  - ? S.Imai\*, M. Aikawa, S. Ebata, "Thick-target yields on radioactive targets estimated by inverse kinematics"

## 国際学会及び国際シンポジウムの組織

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- <組織・運営委員>  
木村真明, 堀内渉 3rd International Workshop on "State of the Art in Nuclear Cluster Physics", Kanto Gakuin University, Yokohama, Japan, 2014.5.26-30.

## 在外研究

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該当なし

## 科研費・助成費の取得状況

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- 堀内渉(代表) 日本学術振興会 科学研究費補助金 若手研究(B) H25-27, 60万円  
「第一原理計算を用いた不安定核・宇宙核反応の研究」
- 木村真明(代表) 日本学術振興会 基盤研究(C) H25-27, 90万円  
「ドリップライン近傍での変形共存と新しいタイプの中性子ハローの研究」
- 木村真明(分担) 日本学術振興会 新学術領域研究 計画研究 H24-28, 35万円  
「中性子星と核物質の理論研究」

## その他

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- 特別講義「物理学特別講義IX: 原子核のクラスター構造と不安定核での新しい様相」  
東京大学, 2014.7.8-10.
- 木村真明  
大阪大学原子核研究センター(RCNP) 研究計画検討専門委員会委員
- 木村真明  
理化学研究所RIビームファクトリー ユーザーグループ