

・成果発表

<原著論文>

- *M. Kimura, T. Suhara and Y. Kanada-En'yo, "Antisymmetrized molecular dynamics studies for exotic clustering phenomena in neutron-rich nuclei", Eur. Phys. J A52, 373 (2016).
- *J.Lee,H.Liu,P Doornenbal,M.Kimura (他 19 名), "Asymmetry dependence of reduction factors from single-nucleon knockout of ^{30}Ne at 230 MeV/nucleon", Prog. Theor. Exp. Phys. 2016, 083D01 (2016).
- *H. Masui and M. Kimura, "Deuteron-like neutron-proton correlation in ^{18}F studied with the cluster-orbital shell model approach", Prog. Theor. Exp. Phys. 2016, 053D01 (2016).
- *W. Horiuchi, S. Hatakeyama, S. Ebata and Y. Suzuki, "Extracting nuclear sizes of medium to heavy nuclei from total reaction cross sections", Phys. Rev. C 93, 044611-1-16 (2016).
- *J. Dohet-Eraly, P. Navrátil, S. Quaglioni, W. Horiuchi, G. Hupin, F. Raimondi, " $^3\text{He}(\alpha, \gamma)^7\text{Be}$ and $^3\text{H}(\alpha, \gamma)^7\text{Li}$ astrophysical S factors from the no-core shell model with continuum", Phys. Lett. B 757, 430-436 (2016).
- *Y. Suzuki, W. Horiuchi, S. Terashima, R. Kanungo, (他 30 名), "Parameter-free calculation of charge-changing cross sections at high energy", Phys. Rev. C 94, 011602(R)-1-5 (2016).
- *R. Kanungo, W. Horiuchi (他 36 名, M. Kimura 17 番目), "Proton distribution radii of $^{12-19}\text{C}$ illuminate features of neutron halos", Phys. Rev. Lett. 117, 102501-1-6 (2016).
- *B. Zhou, A. Tohsaki, H. Horiuchi and Z. Ren, "Breathing-like excited state of the Hoyle state in ^{12}C ", Phys. Rev. C 94, 044319 (2016).
- *M. Lyu, Z. Ren, B. Zhou, et al., "Investigation of ^{10}Be and its cluster dynamics with the nonlocalized clustering approach" Phys. Rev. C 93, 054308 (2016).
- *S. Ohnishi, Y. Ikeda, T. Hyodo and W. Weise, "Structure of the $\Lambda(1405)$ and $K^+d \rightarrow \pi \Sigma n$ reactions", Phys. Rev. C 93, 025207 (2016).
- *Y. Kamiya, K. Miyahara, S. Ohnishi, Y. Ikeda, T. Hyodo, E. Oset, and W. Weise, "Antikaon-nucleon interaction and $\Lambda(1405)$ in chiral SU(3) dynamics", Nucl. Phys. A 954, 41 (2016).
- *Dlchinkhorloo, M. Aikawa, S. Chiba, Y. Hirabayashi, K. Kato, "Low energy scattering cross sections for $n + ^6,7\text{Li}$ reactions using the continuum-discretized coupled-channels method", Phys. Rev. C 93, 064612 (2016).
- *M. Nyman, F. Belloni, D. Ichinkhorloo, E. Pirovano, A. J. M. Plompen and C. Rouki, "Measurement of the 477.6-keV γ -ray production cross section following inelastic neutron scattering by ^7Li ", Phys. Rev. C 93, 024610, (2016).
- *Y. Chiba, Y. Taniguchi and M. Kimura, "Isoscalar dipole transition as a probe for asymmetric clustering", Phys. Rev. C 93, 034319 (2016)
- *T. Baba, M. Kimura "Structure and decay pattern of the linear-chain state in ^{14}C ", Phys. Rev. C 94, 044303 (2016).

<会議抄録等>

- *H. Masui and M. Kimura, "Deuteron-like correlation of valence nucleons for the T=0 channel in ^{18}F ", EPJ Web of Conferences 113, 06003 (2016).
- *J. Dohet-Eraly, P. Navrátil, S. Quaglioni, W. Horiuchi and G. Hupin, "Towards an *ab initio* description of the light-nuclei radiative captures", EPJ Web of Conferences 113, 06002-p.1-4 (2016).
- *R. Sekine, W. Horiuchi, "Evaluation of the photoabsorption cross section of three-nucleon systems", JAEA-Conf 2015-003, 307-312 (2016).
- *W. Horiuchi and Y. Suzuki, "Five-body calculation with Pauli constraint for shell- and cluster-structure in ^{16}O ", EPJ Web of Conferences 113, 06018-p.1-4 (2016).
- *R. Sekine and W. Horiuchi, "Solving time-dependent few-body Schrödinger equation within a basis expansion method", EPJ Web of Conferences 113, 03020-p.1-4 (2016).
- *T. Murata, T. Sato, S. X. Nakamura, W. Horiuchi, "Neutrino Induced ^4He Break-up Reaction -- Application of the Maximum Entropy Method in Calculating Nuclear Strength Function--", JPS Conference proceedings 12, 010049-1-5 (2016).
- *堀内渉, "反応断面積と原子核半径", 原子核研究(原子核物理用語・キーワード解説), Vol. 61 No.1, September 2016, p.17-18.
- 堀内渉, "量子力学的少数体手法による核子多体問題", 原子核研究, Vol. 60 Supplement 1, January 2016, p.22-30.
- *D. Ichinkhorloo, M. Aikawa, S. Chiba, Y. Hirabayashi, K. Kato, "The scattering cross sections for $^{6,7}\text{Li} + n$ reactions", EPJ Web of Conferences, 122, (2016).
- *Manju, Jagjit Singh, P. Banerjee, R. Chatterjee, "Scaling properties in deformed medium mass neutron halo nuclei", Proceedings of the DAE-BRNS Symp. on Nucl. Phys. 61, 474 (2016)

<著書><<共著>>

- M. Kimura, "Cluster states in stable and unstable nuclei", *Progress of time-dependent nuclear reaction theory*, ed. by Y. Iwata, (Bentham Science Publishers 2016).

・ 学術講演

・ 国際学会・国際シンポジウム

<招待講演>

- Clustering effects of nucleons in nuclei and quarks in multi-quark states, [KITPC, Beijing China, 2016.3.28-4.22]
 - *M. Kimura, "Nuclear clustering probed by monopole and dipole responses"
- The 11th International Conference on Clustering Aspects of Nuclear Structure and Dynamics (Cluster '16), [University of Naples, Naples, Italy, 2016.5.23-27]

- *M. Kimura, "Probing asymmetric clusters by isoscalar monopole/dipole transitions"
- *W.Horiuchi, Y.Suzuki, "Alpha-clustering near nuclear surface and harmonic-oscillator excitations"
- The 9th international conference on Direct Reactions with Exotic Beams (DREB) 2016, [Saint Mary's University, Halifax, Canada, 2016.7.11-15]
 - *W. Horiuchi, "Probing nuclear sizes of unstable nuclei with total reaction cross sections"
- International workshop for the collective motions in nuclei, [Weihei, China. 2016.7.21.]
 - *M. Kimura, "Clusters and Responses in Atomic nuclei"
- Mini-Workshop on Three-nucleon force & its related topics, [Tohoku University, Sendai, Japan, 2016.8.4]
 - *W. Horiuchi, "Two-(&Three-)nucleon correlations in ^4He "
- RIBF Users meeting, [RIKEN, Wako, Japan, 2016.9.8-9]
 - *W. Horiuchi, "Probes of neutron-skin thickness and weakly-bound neutron correlations"
- Invited seminar, [University of Padova, Italy, 2016.10.21]
 - *J. Singh, "Continuum excitation's in the Borromean systems and the unbound $2n$ -systems: ^6He and ^{26}O ",
- Workshop on Nuclear Cluster Physics (WNCP2016), [Kannai Media Center, Kanto Gakuin University, Yokohama, Japan, 2016.11.14-17]
 - *M. Kimura, "Nuclear responses and Clustering phenomena"
 - *B. Zhou, "Container picture for cluster structures of ^{12}C "
- The Third Myanmar-Japan Symposium, [Patheingyi University, Patheingyi, Myanmar, 2016.12.3-4]
 - *W. Horiuchi, "Recent Activities in Theoretical Nuclear Physics Laboratory at Hokkaido University"
- First Tsukuba-CCS-RIKEN joint workshop on microscopic theories of nuclear structure and dynamics, [RIKEN Nishina Center, 2016.12.12-13, University of Tsukuba, 2016.12.14-16]
 - *M. Kimura, "Clustering and Nuclear responses"
 - *W. Horiuchi, "Probing nuclear radii from the total reaction and charge-changing cross sections"

<一般講演> <<口頭発表>>

- International workshop on J-PARC hadron physics in 2016, [Tokai, Japan, 2016.3.2-4]
 - *S. Ohnishi, T. Hoshino, W. Horiuchi, K. Miyahara, T. Hyodo, "Few-body approach for structure of light kaonic nuclei"
- Clustering effects of nucleons in nuclei and quarks in multi-quark states, [KITPC, Beijing China, 2016.3.28-4.22]
 - *T. Baba and M. Kimura, "Linear-chain structure in C isotopes"
- The 11th International Conference on Clustering Aspects of Nuclear Structure and Dynamics

(Cluster '16), [University of Naples, Naples, Italy, 2016.5.23-27]

- *Y. Chiba, Y. Taniguchi and M. Kimura, "Asymmetric cluster structure and isoscalar monopole/dipole transitions of ^{28}Si "
 - *T. Baba, M. Kimura, "Structure and decay pattern of linear-chain states in neutron-rich Carbon isotopes"
 - *R. Imai and M. Kimura, "A new generator coordinate method to describe α gas-like states"
- 6th International Conference on Contemporary Physics, [Ulaanbaatar, Mongolia, 2016.6.8]
- *D. Ichinkhorloo, M. Aikawa, S. Chiba, Y. Hirabayashi and K. Kato, "The Continuum Discretized Coupled Channels Method to Nucleon-Induced Reactions on ^6Li "
- 14th International Symposium on Nuclei in the Cosmos XIV [Toki Messe, Niigata, Japan, 2016.6.19-24]
- *M. Kimura, "Probing asymmetric cluster states of astrophysical interest using isoscalar monopole and dipole transitions"
- Mini-Workshop on Nuclear Clustering 2016, [Peking University, Beijing, China, 2016.7.2-3]
- *M. Kimura, "Probing asymmetric cluster states using isoscalar monopole and dipole transitions"
 - *W. Horiuchi, "Nuclear responses and weakly-bound neutrons in ^6He "
 - *Y. Chiba, Y. Taniguchi and M. Kimura, "Asymmetric clustering in ^{28}Si probed by isoscalar monopole and dipole transitions"
 - *T. Baba and M. Kimura, "Structure and decay pattern of linear-chain states in C isotopes"
- 2016 Dalian International Workshop on Nuclear Physics, [Dalian, China, 2016.7.20-23]
- *Y. Chiba, "Asymmetric clustering in $N=Z$ nuclei and isoscalar monopole and dipole transitions"
- The 14th International Conference on Meson-Nucleon Physics and Structure of the Nucleon (MENU2016), [Kyoto, Japan, 2016.7.25-30]
- *S. Ohnishi, W. Horiuchi, T. Hoshino, K. Miyahara, T. Hyodo, "Few-body approach for structure of light kaonic nuclei"
- Meson in Nucleus 2016 (MIN16), [Kyoto, Japan, 2016.7.31-8.2]
- *S. Ohnishi, W. Horiuchi, T. Hoshino, K. Miyahara and T. Hyodo, "Structure of light kaonic nuclei and kaon-nucleon interaction"
- The 23rd European Conference on Few-Body Problems in Physics, [Arhus, Denmark, 2016.8.8-12]
- *R. Sekine and W. Horiuchi, "Time-dependent correlated Gaussian approach to the nuclear response of few-nucleon systems"
- 2016 JAEA/ASRC Reimei Workshop: New exotic hadron matter at J-PARC, [Incheon, Korea,

2016.10.24-26]

- *S. Ohnishi, W. Horiuchi, T. Hoshino, K. Miyahara, T. Hyodo, "Few-body approach for structure of light kaonic nuclei"
- The 7th Asian Nuclear Reaction Database Development Workshop [China Nuclear Data Center, China Institute of Atomic Energy, China, 2016.11.8-11]
 - *D. Ichinkhorloo, M. Aikawa, S. Chiba, Y. Hirabayashi and K. Kato, "Low energy scattering cross sections for ${}^6\text{Li}+n$ and ${}^7\text{Li}+n$ reactions"
- Workshop on Nuclear Cluster Physics (WNCP2016), [Kannai Media Center, Kanto Gakuin University, Yokohama, Japan, 2016.11.14-17]
 - *W. Horiuchi et al. "Dipole excitations of two-neutron halo nuclei"
 - *Y. Chiba, Y. Taniguchi and M. Kimura, "Cluster correlation in the excited states of ${}^{28}\text{Si}$ "
 - *T. Baba and M. Kimura, "Ternary decay of linear-chain state in ${}^{14}\text{C}$ "
 - *R. Imai, M. Kimura, " α cluster structures of ${}^{12}\text{C}$ including negative parity states by time-evolution method"
- Myanmar-Hokkaido Workshop on Theoretical Nuclear Physics 2016, [Patheingyi University, Patheingyi, Myanmar, 2016.12.2]
 - *W. Horiuchi, "Precise few-body calculations for kaonic atoms and nuclei"

<一般講演> <<ポスター発表>>

- The 31st Reimei WorkShop on Hadron Physics in Extreme Conditions at J-PARC, [Advanced Science Research Center (ASRC), JAEA Tokai Campus, Tokai, Japan, 2016.1.18-20]
 - S. Ohnishi, T. Hoshino, W. Horiuchi, K. Miyahara, T. Hyodo, "Few-body calculations of anti-kaon nucleus quasi-bound states"
- 14th International Symposium on Nuclei in the Cosmos XIV [Toki Messe, Niigata, Japan, 2016.6.19-24]
 - R. Sekine and W. Horiuchi, "Photoabsorption of few-nucleon systems with time-dependent correlated Gaussian method"
 - T. Baba, M. Kimura, "Structure and decay pattern of linear-chain states in neutron-rich Carbon isotopes"
- Compact stars and gravitational waves, [YITP, Kyoto University, Kyoto, Japan, 2016.10.31-11.4]
 - S. Ohnishi, W. Horiuchi, T. Hoshino, K. Miyahara, T. Hyodo, "Antikaon-nucleon interaction and structure of kaonic nuclei",

・国内学会・国内その他

<招待講演>

- RCNP 研究会「全反応断面積及び荷電変化断面積による陽子・中性子半径研究の現状と展望」 [大阪大学核物理研究センター, 2016.1.12-13]

- *堀内渉, “全反応断面積による陽子・中性子半径の決定”
- RIBF-ULIC mini workshop 034 “Measurements of Reaction & Charge Changing Cross Sections for Ni Isotopes and Related Topics”, [理化学研究所和光キャンパス, 2016.3.11]
- *堀内渉, “全反応断面積で探る不安定核構造”
- 京都大学基礎物理学研究所セミナー, [京都大学基礎物理学研究所, 京都, 日本, 2016.6.29]
- *S. Ohnishi, T. Hoshino, W. Horiuchi, K. Miyahara, T. Hyodo, “Few-body approach to structure of light kaonic nuclei”
- 京都大学原子核理論研究室核子多体論セミナー, [京都大学, 2016.7.15]
- *Y. Chiba, “Isoscalar monopole/dipole excitations as a probe for asymmetric cluster structure”
- 日本物理学会 2016 年秋季大会シンポジウム「原子核の応答から探る多体相関」, [宮崎大学木花キャンパス, 2016.9.21-24]
- *千葉陽平, “アイソスカラー型単極/双極励起で探るクラスター相関”
- RCNP Seminar, [RCNP, 2016.10.20]
- *Y. Chiba, “Isoscalar monopole/dipole transitions as a probe for asymmetric cluster”

<一般講演> <<口頭発表>>

- RCNP 研究会, 「全反応断面積及び荷電変化断面積による陽子・中性子半径研究の現状と展望」 [大阪大学核物理研究センター, 2016.1.12-13]
- *木村真明, “反応断面積と中性子過剰核におけるクラスターの発現”
- 日本物理学会第 71 回年次大会, [東北学院大学泉キャンパス, 2016.3.19-22]
- *木村真明, “ ^{26}Ne ピグミー共鳴の構造と崩壊モード”
- *堀内渉, Thomas Neff, Hans Feldmeier, “原子核の運動量分布と多核子相関”
- *大西洋太, 星野翼, 堀内渉, 宮原建太, 兵藤哲雄, “反 K 中間子原子核準束縛状態に対する少数体的アプローチ”
- *千葉陽平, 谷口億宇, 木村真明, “ ^{28}Si の高励起 $^{24}\text{Mg} + \alpha / ^{16}\text{O} + ^{12}\text{C}$ クラスター回転帯”
- *畠山慎也, 堀内渉, “非弾性散乱による原子核回転励起強度の研究”
- *河村成美, 堀内渉, “荷電交換遷移による ^6He の 2 中性子相関の研究”
- *関根里英, 堀内渉, “時間依存相関ガウス基底法の開発とその原子核応答への応用”
- *馬場智之, 木村真明, “ ^{16}C における 3α クラスター状態とアルファ崩壊幅”
- *今井涼介, 木村真明, “生成座標法による軽い 4N 核のクラスター構造の研究”
- 2016 年度原子核三者若手夏の学校, [黒姫ライジングサンホテル(長野), 2016.7.31-8.5]
- *関根里英, 堀内渉, “時間依存相関ガウス基底の開発と光核反応への応用”
- *馬場智之, 木村真明, “炭素同位体における直鎖クラスター状態とアルファ崩壊幅”
- *今井涼介, 木村真明, “生成座標法によるクラスター構造の研究”
- *星野翼, 大西洋太, 堀内渉, “三体模型による K 中間子重水素スペクトルの研究”
- 2016 年度 原子核理論 北海道地域スクール, [北海道大学, 2016.9.6-8]
- *馬場智之, 木村真明, “炭素同位体における直鎖クラスター構造の崩壊モードについて”

- *今井涼介, 木村真明, “実時間生成座標法によるクラスター構造の研究”
- *星野翼, 大西祥太, 堀内渉, “精密三体計算による K 中間子重水素レベルシフト”
- *荒井俊貴, 堀内渉, “超対称変換による位相差等価ポテンシャルの生成”
- 日本物理学会 2016 年秋季大会, [宮崎大学木花キャンパス, 2016.9.21-24]
 - *木村真明, “中性子過剰ネオン同位体のピグミー共鳴”
 - *B. Zhou, A. Tohsaki, H. Horiuchi, Zz. Ren, “Breathing-like excited state of the Hoyle state in ^{12}C ”
 - *大西祥太, 星野翼, 堀内渉, 宮原建太, 兵藤哲雄 “多 K 原子核における $\Lambda(1405)$ 共鳴の役割”
 - *関根里英, 堀内渉, “時間依存相関ガウス基底法の開発とその原子核応答への応用 II ”
 - *馬場智之, 木村真明, “炭素同位体における直鎖クラスター構造の崩壊モードについて”
 - *今井涼介, 木村真明, “実時間生成座標法によるクラスター構造の研究”
- 日本物理学会 2016 年秋季大会シンポジウム, 「反応断面積による核半径研究の進展」, [宮崎大学木花キャンパス, 2016.9.21-24]
 - *堀内渉, “主旨説明”

・国際学会及び国際シンポジウムの組織

- 木村真明 (組織委員), “Workshop on Nuclear Cluster Physics”, 2016.11.14-17, Yokohama, Japan.
- 堀内渉(世話人), “Myanmar-Hokkaido Workshop on Theoretical Nuclear Physics, 2016”, 2016.12.2, Patheingyi University, Patheingyi, Myanmar

・科研費、助成金取得状況

- 木村真明, 科研費・基盤研究 C(代表), 2016.04－ 1,500 千円, 「単極、双極遷移をプローブとするクラスター共鳴の探査と炭素燃焼過程への応用」
- 木村真明, 科研費・研究成果公開促進費(分担), 2016.04－, 1,600 千円, 「天体核反応データファイル」
- 木村真明, 科研費・新学術領域研究(研究領域提案型, 分担), 2016.04－, 4,200 千円, 「中性子星と核物質の理論研究」
- 堀内渉, 科研費・基盤研究 C(分担), 2015.04－, 500 千円 「酸素 16 生成の鍵-炭素 $^{12}\text{C} + \alpha$ 閾値近傍状態の構造研究」
- 堀内渉, RCNP 研究会 「全反応断面積及び荷電変化断面積による陽子・中性子半径研究の現状と展望」 採択額 30 万円, 2016.1.12-13

・その他の活動

<学外委員>

- 木村真明, 大阪大学核物理研究センター 研究計画検討専門委員会委員.

- 木村真明, 京都大学基礎物理学研究所 共同利用運営委員.
- 木村真明, 理化学研究所 RIBF ユーザーグループ委員.
- 木村真明, 素粒子論グループ 核理論談話会 核理論委員会委員
- 堀内渉, 原子核研究 編集委員

<集中講義>

- M. Kimura, "Recent topics in Nuclear cluster studies", 8th summer school for theoretical physics, [Weihei, China 2016.7.19-20]