Publication list 2021

Peer-Reviewed Papers

(1) Measurement of double-differential thick-target neutron yields of the C(*d*,*n*) reaction at 12, 20, and 30 MeV

Md Kawchar Ahmed Patwary, Tadahiro Kin, Katsumi Aoki, Kosuke Yoshinami, Masaya Yamaguchi, Yukinobu Watanabe, Kasuaki Tsukada, Nozomi Sato, Masato Asai, Testsuya K. Sato, Yuichi Hatsukawa, and Shinsuke Nakayama

J. Nucl. Sci. Technol. 58, 252 (2021).

(2) Experimental study of the Γ_{p1}/Γ_{p0} ratios of resonance states in ^{8}Be for deducing the ^{7}Be(n,p_1)^{7}Li* reaction rate relevant to the cosmological lithium problem

N. Iwasa, S. Ishikawa, S. Kubono, T. Sakakibara, K. Kominato, K. Nishio, M. Matsuda, K. Hirose, H. Makii, R. Orlandi, K. Asada, D. Guru, S. Nishimura, S. Hayakawa, and T. Kawabata

Phys. Rev. C **103**, 015801 (2021).

(3) Beta decay of the axially asymmetric ground state of ^{192}Re

H. Watanabe, Y.X. Watanabe, Y. Hirayama, A.N. Andreyev, T. Hashimoto, F.G. Kondev, G.J. Lane, Yu.A. Litvinov, J.J. Liu, H. Miyatake, J.Y. Moon. A.I. Morales, M. Mukai, S. Nishimura, T. Niwase, M. Rosenbusch, P. Schury, Y. Shi, M. Wada, P.M. Walker

Phys. Lett. B **814**, 136088 (2021).

(4) Laser Spectroscopy of Neutron-Rich ^{207,208}Hg Isotopes: Illuminating the Kink and Odd-Even Staggering in Charge Radii across the N=126 Shell Closure

T. Day Goodacre, A.V. Afanasjev, A.E. Barzakh, B.A. Marsh, S. Sels, P. Ring, H. Nakada, A.N. Andreyev, P. Van Duppen, N.A. Althubiti, B. Andel., D. Atanasov, J. Billowes, K. Blaum, T.E. Cocolios, J.G. Cubiss, G.J. Farooq-Smith, D.V. Fedorov, V.N. Felosseev, K.T. Flanagan, L.P. Gaffney, L. Ghys, M. Huyse, S. Kreim, D. Lunney, K.M. Lynch, V. Manea, Y. Martinez Palenzuela, P.L. Molkanov, M. Rosenbusch, R.E. Rossel, S. Rothe, L. Schweikhard, M.D. Seliverstov, P. Spagnoletti, C. Van Beveren, M. Veinhard, E. Verstraelen, A. Welker, K. Wendt, F. Wienholtz, R.N. Wolf, A. Zadvornaya, and K. Zuber

Phys. Rev. Lett. **126**, 032502 (2021).

(5) Experimental Evidence for Common Driving Effects in Low-Energy Fission from Sublead to Actinides

C. Schmitt, A. Lemasson, K.-H. Schmidt, A. Jhingan, S. Biswas, Y.H. Kim, D. Ramos, A.N. Andreyev, D. Curien, M. Ciemala, E. Clément, O. Dorvaux, B. De Canditiis, F. Didierjean, G. Duchêne, J. Dudouet, J. Frankland, B. Jacquot, C. Raison, D. Ralet, B.-M. Retailleau, L. Stuttgé, and I. Tsekhanovich

Phys. Rev. Lett. **126**, 132502 (2021).

(6) Identification of sub-μs isomeric states in the odd-odd nucleus ^{178}Au

S.A. Gillespie, A. Stott, A.N. Andreyev, J.G. Cubiss, M. Al Monthery, C.J. Barton, S. Antalic, K. Auranen, H. Badran, D. Cox, T. Grahn, P.T. Greenlees, A. Herzan, E. Higgins, R. Julin, S. Juutinen,

J. Klimo, J. Konki, M. Leino, M. Mallaburn, J. Pakarinen, P. Papadakis, J. Partanen, P.M. Prajapati, P. Rahkila, M. Sandzelius, C. Scholey, J. Sorri, S. Stolze, R. Urban, J. Uusitalo, M. Venhart, and F. Wearing

Phys. Rev. C **103**, 044307 (2021).

(7) New α-Emitting Isotope ^{214}U and Abnormal Enhancement of α-Particle Clustering in Lightest Uranium Isotopes

Z. Y. Zhang, H. B. Yang, M. H. Huang, Z. G. Gan, C. X. Yuan, C. Qi, A. N. Andreye, M. L. Liu, L. Ma, M. M. Zhang, Y. L. Tian, Y. S. Wang, J. G. Wang, C. L. Yang, G. S. Li, Y. H. Qiang, W. Q. Yang, R. F. Chen, H. B. Zhang, Z. W. Lu, X. X. Xu, L. M. Duan, H. R. Yang, W. X. Huang, Z. Liu, X. H. Zhou, Y. H. Zhang, H. S. Xu, N. Wang, H. B. Zhou, X. J. Wen, S. Huang, W. Hua, L. Zhu, X. Wang, Y. C. Mao, X. T. He, S. Y. Wang, W. Z. Xu, H. W. Li, Z. Z. Ren, and S. G. Zhou

Phys. Rev. Lett. **126**, 152502 (2021).

(8) Competition between allowed and first-forbidden β decays of ^{208}At and expansion of the ^{208}Po level scheme

M. Brunet, Zs. Podolyák, T. A. Berry, B. A. Brown, R. J. Carroll, R. Lica, Ch. Sotty, A. N. Andreyev, M. J. G. Borge, J. G. Cubiss, L. M. Fraile, H. O. U. Fynbo, E. Gamba, P. Greenlees, L. J. Harkness-Brennan, M. Huyse, D. S. Judson, J. Konki, J. Kurcewicz, I. Lazarus, M. Madurga, N. Marginean, R. Marginean, I. Marroquin, C. Mihai, E. Nácher, A. Negret, S. Pascu, R. D. Page, A. Perea, J. Phrompao, M. Piersa, V. Pucknell, P. Rahkila, E. Rapisarda, P. H. Regan, F. Rotaru, M. Rudigier, C. M. Shand, R. Shearman, E. C. Simpson, T. Stora, O. Tengblad, P. Van Duppen, V. Vedia, S. Vinals, R. Wadsworth, N. Warr, and H. De Witte

Phys. Rev. C **103**, 054327 (2021).

(9) Gas phase synthesis of 4d transition metal carbonyl complexes with thermalized fission fragments in single-atom reactions

M. Götz, S. Götz, J. V. Kratz, J. Ballof, Ch. E. Düllmann, K. Eberhardt, C. Mokry, D. Renisch, J. Runke, T. K. Sato, P. Thörle-Pospiech, N. Trautmann, A. Yakushev

Radiochim. Acta 109, 153 (2021).

(10) Chemical Characterization of a Volatile Dubnium Compound, $DbOCl_3$

Nadine M. Chiera, Tetsuya K. Sato, Robert Eichler, Tomohiro Tomitsuka, Masato Asai, Sadia Adachi, Rugard Dressler, Kentaro Hirose, Hiroki Inoue, Yuta Ito, Ayuna Kashihara, Hiroyuki Makii, Katsuhisa Nishio, Minoru Sakama, Kaori Shirai, Hayato Suzuki, Katsuyuki Tokoi, Kazuaki Tsukada, Eisuke Watanabe, Yuichiro Nagame

Angew. Chem. Int. Ed. 60, 17871 (2021).

(11) Nuclear structure of Te isotopes beyond neutron magic number N=82

B.Moon, A.Jungclaus, H.Naidja, A.Gargano, R.Lozeva, C.-B.Moon, A.Odahara, G.S.Simpson, S.Nishimura, F.Browne, P.Doornenbal, G.Gey, J.Keatings, G.Lorusso, Z.Patel, S.Rice, M.Si, L.Sinclair, P.-A.Soderstrom, T.Sumikama, J.Taprogge, H.Watanabe, J.Wu, Z.Y.Xu, A.Yagi, D.S.Ahn, H.Baba, F.L.Bello Garrote, S.Bonig, R.Daido, J.M.Daugas, F.Didierjean, F.Drouet,

Y.Fang, N.Fukuda, R.Gernhauser, B.Hong, E.Ideguchi, S.Ilieva, N.Inabe, T.Ishigaki, T.Isobe, H.S.Jung, D.Kameda, I.Kojouharov, T.Komatsubara, T.Kroll, T.Kubo, N.Kurz, Y.K.Kwon, C.S.Lee, P.Lee, Z.Li, A.Montaner-Piza, S.Morimoto, K.Moschner, D.Mucher, D.Murai, M.Niikura, H.Nishibata, I.Nishizuka, R.Orlandi, H.Sakurai, H.Schaffner, Y.Shimizu, K.Steiger, H.Suzuki, H.Takeda, K.Tshoo, Zs.Vajta, A.Wendt, R.Yokoyama, K.Yoshinaga
Phys.Rev. C 103, 034320 (2021).

(12) Laser-assisted nuclear decay spectroscopy of ^{176,177,179}Au
R. D. Harding, A. N. Andreyev, A. E. Barzakh, J. G. Cubiss, P. Van Duppen, M. Al Monthery, N. A. Althubiti, B. Andel, S. Antalic, T. E. Cocolios, T. Day Goodacre, K. Dockx, G. J. Farooq-Smith, D. V. Fedorov, V. N. Fedosseev, D. A. Fink, L. P. Gaffney, L. Ghys, J. D. Johnson, D. T. Joss, M. Huyse, N. Imai, K. M. Lynch, B. A. Marsh, Y. Martinez Palenzuela, P. L. Molkanov, G. G. O'Neill, R. D. Page, R. E. Rossel, S. Rothe, M. D. Seliverstov, S. Sels, C. Van Beveren, E. Verstraelen,
Phys.Rev. C 104, 024326 (2021).

(13) The ^{59}Fe(n,γ)^{60}Fe Cross Section from the Surrogate Ratio Method and Its Effect on the ^{60}Fe Nucleosynthesis
S.Q. Yan X.Y. Li, K. Nishio, M. Lugaro, Z.H.Li, H. Makii, M. Pignatari, Y.B. Wang, R. Orlandi, K. Hirose, K. Tsukada, P. Mohr, G.S. Li, J.G. Wang, B.S. Gao, Y.L.Han, B. Guo, Y.J. Li, Y.P. Shen, T.K. Sato, Y. Ito, F. Suzaki, J. Su, Y.Y. Yang, J.S. Wang, J.B. Ma, P. Ma, Z. Bai, S.W. Xu, J. Ren, Q.W. Fan, S. Zeng, Z.Y. Han, W. Nan, W.K. Nan, C. Chen, G. Lian, Q. Hu, F.F. Duan, S.Y. Jin, X.D. Tang, and W.P. Liu,
Astrophys. J. 919, 84 (2021).

(14) Large scale production of ^{64}Cu and ^{67}Cu via the ^{64}Zn(n,p)^{64}Cu and ^{68}Zn(n,pd/d)^{67}Cu reactions using accelerator neutrons
Masako Kawabata, Shoji Motoishi, Akio Ohta, Arata Motomura, Hideya Saeki, Kasuaki Tsukada, Shitaro Hashimoto, Nobuyuki Iwamoto, Yasuki Nagai, and Kazuyuki Hashimoto,
J. Radioanal. Nucl. Chem. 330, 913.
https://doi.org/10.1007/s10967-021-07987-3

(15) Transition probabilities in ^{31}P and ^{31}S: A test for isospin symmetry
D.Tonev, G.de Angelis, I.Deloncle, N.Goutev, G.De Gregorio, P.Pavlov, I.L.Pantaleev, S.Iliev, M.S.Yavahchova, P.G.Bizzeti, A.Demerdjiev, D.T.Dimitrov, E.Farnea, A.Gadea, E.Geleva, C.Y.He, H.Laftchiev, S.M.Lenzi, S.Lunardi, N.Marginean, R.Menegazzo, D.R.Napoli, F.Nowacki, R.Orlandi, H.Penttila, F.Recchia, E.Sahin, R.P.Singh, M.Stoyanova, C.A.Ur, H.-F.Wirth,
Phys. Lett. B 821, 136603 (2021).

(16) Asymmetric and symmetric fission of excited nuclei of ^{180,190}Hg and ^{184,192,202}Pb formed in the reactions with ^{36}Ar and ^{40,48}Ca ions
A. A. Bogachev, E. M. Kozulin, G. N. Knyazheva, I. M. Itkis, M. G. Itkis, K. V. Novikov, D. Kumar, T. Banerjee, I. N. Diatlov, M. Cheralu, V. V. Kirakosyan, Y. S. Mukhamejanov, A. N. Pan, I. V. Pchelintsev, R. S. Tikhomirov, I. V. Vorobiev, M. Maiti, R. Prajapat, R. Kumar, G. Sarkar, W. H.

Trzaska, A. N. Andreyev, I. M. Harca, and E. Vardaci,
Phys. Rev. C 104, 024632 (2021).

(17) Large Shape Staggering in Neutron-Deficient Bi Isotopes
A. Barzakh, A. N. Andreyev, C. Raison, J. G. Cubiss, P. Van Duppen, S. Peru, S. Hilaire, S. Goriely, B. Andel, S. Antalic, M. Al Monthery, J. C. Berengut, J. Bieron, M. L. Bissell, A. Borschevsky, K. Chrysalidis, T. E. Cocolios, T. Day Goodacre, J.-P. Dognon, M. Elantkowska, E. Eliav, G. J. Farooq-Smith, D. V. Fedorov, V. N. Fedosseev, L. P. Gaffney, R. F. Garcia Ruiz, M. Godefroid, C. Granados, R. D. Harding, R. Heinke, M. Huyse, J. Karls, P. Larmonier, J. G. Li, K. M. Lynch, D. E. Maison, B. A. Marsh, P. Molkanov, P. Mosat, A. V. Oleynichenko, V. Panteleev, P. Pyykko, M. L. Reitsma, K. Rezynkina, R. E. Rossel, S. Rothe, J. Ruczkowski, S. Schiffmann, C. Seiffert, M. D. Seliverstov, S. Sels, L. V. Skripnikov, M. Stryjczyk, D. Studer, M. Verlinde, S. Wilman, A. V. Zaitsevskii,
Phys. Rev. Lett. 127, 192501 (2021).

(18) New β-decaying state in ^{214}Bi
B. Andel, P. Van Duppen, A. N. Andreyev, A. Blazhev, H. Grawe, R. Lica, H. Naidja, M. Stryjczyk, A. Algora, S. Antalic, A. Barzakh, J. Benito, G. Benzoni, T. Berry, M. J. G. Borge, K. Chrysalidis, C. Clisu, C. Costache, J. G. Cubiss, H. De Witte, D. V. Fedorov, V. N. Fedosseev, L. M. Fraile, H. O. U. Fynbo, P. T. Greenlees, L. J. Harkness-Brennan, M. Huyse, A. Illana, J. Jolie, D. S. Judson, J. Konki, I. Lazarus, M. Madurga, N. Marginean, R. Marginean, C. Mihai, B. A. Marsh, P. Molkanov, P. Mosat, J. R. Murias, E. Nacher, A. Negret, R. D. Page, S. Pascu, A. Perea, V. Pucknell, P. Rahkila, E. Rapisarda, K. Rezynkina, V. Sanchez-Tembleque, K. Schomacker, M. D. Seliverstov, C. Sotty, L. Stan, C. Surder, O. Tengblad, V. Vedia, S. Viinals, R. Wadsworth, N. Warr,
Phys. Rev. C 104, 054301 (2021).

(19) Angular momentum transfer in multinucleon transfer channels of ^{18}O + ^{237}Np
S. Tanaka, K. Hirose, K. Nishio, K. R. Kean, H. Makii, R. Orlandi, K. Tsukada, and Y. Aritomo,
Phys. Rev. C 105, L021602 (2022).

(20) Estimated Isotopic Compositions of Yb in Enriched ^{176}Yb for Producing ^{177}Lu with High Radionuclide Purity by ^{176}Yb(d,x)^{177}Lu
Yasuki Nagai, Masako Kawabata, Shintaro Hashimoto, Kazuaki Tsukada, Kazuyuki Hashimoto, Shoji Saeki, Arata Motomura, Futoshi Minato, and Masatoshi Itoh,
J. Phys. Soc. Jpn. 91, 044201 (2022).

Invited Talks at International Conferences

(1) Fission study using multi-nucleon transfer reaction
K. Nishio, 2021 Korean Physical Society Spring Meeting. 22nd April (ZOOM).

(2) Fission experiment using Es-254 target material at JAEA tandem accelerator facility
K. Hirose et al.,
18th Workshop on Recoil Separator for Superheavy Element Chemistry TASCA2021,

21-23 June (2021). ZOOM

(3) Chemistry of the heaviest actinide, Lr, using its ion beams

Y. Nagame

International Discussion Meeting on Future of Accelerator Applications and Radiotracers Research (FAAARR-2021), Kolkata, India, July 26-27, 2021. ZOOM

(4) Experimental study of heavy-ion induced reaction and fission at JAEA（ZOOM, in Japanese）

K. Nishio

6th Seminar in A J-PARC-HI Evening, 7th September 2021.

(5) Studies of fission in heavy transactinides by means of multinucleon transfer reactions at JAEA

K. Nishio,

Virtual Conference on Applied Radiation Metrology, UK Nuclear Data Network. 26th November 2021 (ZOOM).

(6) Fission of actinides studied by multinucleon transfer reactions at JAEA-Tokai

K. Nishio,

15th biennial DAE-BRNS Symposium on Nuclear and Radiochemistry (NUCAR-2021) DAE Convention Centre, Anushaktinagar, Mumbai – 400094

February 22-26, 2022.

Books and Scientific Articles

None

Patents

None

Awards

(1) 令和 3 年度科学技術分野の文部科学大臣表彰　科学技術賞（研究部門）

単一原子を対象とした重アクチノイド原子構造研究

佐藤　哲也

Press Release

(1) Chemical Characterization of a Volatile Dubnium Compound, $DbOCl_3$,

T.K. Sato (Jul. 2021).

(2) To create the ultimate atomic nucleus

－Advancing toward the "island of stability" of superheavy elements -

S. Tanaka, K. Hirose, K. Nishio, Y. Aritomo (Feb. 2022)