UK Nuclear Activity

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In this issue,

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1. Nuclear Physics Publications for January (also includes missed publications from previous months)

If you are publishing a paper that you think would be of media value please contact Wendy Ellison, STFC Press Officer. She can help with press releases and publicity. If you get in touch with her before publication she can also get material ready in advance for the day of publication.

Nuclear Inst. and Methods in Physics Research A **957**, 163397
https://www.sciencedirect.com/science/article/pii/S0168900220300048?via%3Dihub
Fission fragment atomic number measurements using Bragg detectors
N.V.Sosnin[a], A.G.Smith[a], T.Wright[a], U.Köster[b], A.Blanc[b], B.S.Nara Singh[ac], R.L.Kennedy-Reid[a], and P.J.Davies[a]
Available online 10 January 2020

Phys. Rev. Lett. **124**, 022501
https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.124.022501
Fragmentation of Single-Particle Strength around the Doubly Magic Nucleus ^{132}Sn and the Position of the $0f_{5/2}$ Proton-Hole State in ^{131}In
V. Vaquero[1,*], A. Jungclaus[1], T. Aumann[2,3], J. Tscheuschner[2], E. V. Litvinova[4], J. A. Tostevin[5], H. Baba[6], D. S. Ahn[6], R. Avigo[7,8], K. Boretzky[3], A. Bracco[7,8], C. Caesar[2,3], F. Camera[7,8], S. Chen[9,6], V. Derya[10], P. Doornenbal[6], J. Endres[10], N. Fukuda[6], U. Garg[11], A. Giaz[7], M. N. Harakeh[3,12], M. Heil[3], A. Horvat[2], K. Ieki[13], N. Imai[14], N. Inabe[6], N. Kalantar-Nayestanaki[12], N. Kobayashi[14], Y. Kondo[15], S. Koyama[14], T. Kubo[6], I. Martel[16], M. Matsushita[17], B. Million[8], T. Motobayashi[6], T. Nakamura[15], N. Nakatsuka[6,2], M. Nishimura[6], S. Nishimura[6], S. Ota[17], H. Otsu[6], T. Ozaki[15], M. Petri[2], R. Reifarth[18], J. L. Rodríguez-Sánchez[19,3], D. Rossi[2], A. T. Saito[15], H. Sakurai[6,14], D. Savran[3], H. Scheit[2], F. Schindler[2,3], P. Schrock[2], D. Semmler[2], Y. Shiga[13,6], M. Shikata[15], Y. Shimizu[6], H. Simon[3], D. Steppenbeck[6], H. Suzuki[6], T. Sumikama[6], D. Symochko[2], I. Syndikus[2], H. Takeda[6], S. Takeuchi[6], R. Taniuchi[14], Y. Togano[15], J. Tsubota[15], H. Wang[6], O. Wieland[8], K. Yoneda[6], J. Zenihiro[6], and A. Zilges[10]
Published 13 January 2020

Edited by James Benstead, IOP Nuclear Physics Group Committee
james.benstead@awe.co.uk or j.benstead@surrey.ac.uk

Phys. Rev. Lett. **124**, 042503
https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.124.042503

Evolution of Octupole Deformation in Radium Nuclei from Coulomb Excitation of Radioactive ^{222}Ra and ^{228}Ra Beams

P. A. Butler[1,*], L. P. Gaffney[1,2], P. Spagnoletti[3], K. Abrahams[4], M. Bowry[3,5], J. Cederkäll[6], G. de Angelis[7], H. De Witte[8], P. E. Garrett[9], A. Goldkuhle[10], C. Henrich[11], A. Illana[7], K. Johnston[2], D. T. Joss[1], J. M. Keatings[3], N. A. Kelly[3], M. Komorowska[12], J. Konki[2], T. Kröll[11], M. Lozano[2], B. S. Nara Singh[3], D. O'Donnell[3], J. Ojala[13,14], R. D. Page[1], L. G. Pedersen[15], C. Raison[16], P. Reiter[10], J. A. Rodriguez[2], D. Rosiak[10], S. Rothe[2], M. Scheck[3], M. Seidlitz[10], T. M. Shneidman[17], B. Siebeck[10], J. Sinclair[3], J. F. Smith[3], M. Stryjczyk[8], P. Van Duppen[8], S. Vinals[18], V. Virtanen[13,14], N. Warr[10], K. Wrzosek-Lipska[12], and M. Zielińska[19]
Published 31 January 2020

Phys. Rev. C **101**, 011301(R)
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.101.011301

Stability of the heaviest elements: K isomer in ^{250}No

J. Kallunkathariyil[1], B. Sulignano[1,*], P. T. Greenlees[2], J. Khuyagbaatar[3], Ch. Theisen[1], K. Auranen[2], H. Badran[2], F. Bisso[2], P. Brionnet[4,†], R. Briselet[1], A. Drouart[1], Z. Favier[1], T. Goigoux[1], T. Grahn[2], K. Hauschild[5], A. Herzan[2,‡], F. P. Heßberger[3], U. Jakobsson[2,§], R. Julin[2], S. Juutinen[2], J. Konki[2,‖], M. Leino[2], A. Lightfoot[2], J. Pakarinen[2], P. Papadakis[2,¶], J. Partanen[2], P. Peura[2,**], P. Rahkila[2], K. Rezynkina[5,††], P. Ruotsalainen[2], M. Sandzelius[2], J. Saren[2], C. Scholey[2], M. Siciliano[1], J. Sorri[2,‡‡], S. Stolze[6,§§], A. I. Svirikhin[6], J. Uusitalo[2], M. Vandebrouck[1], A. Ward[7], C. Wraith[7], and M. Zielińska[1]
Published 6 January 2020

Phys. Rev. C **101**, 014303
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.101.014303

Low-Z boundary of the N=88–90 shape phase transition: ^{148}Ce near the critical point

P. Koseoglou[1,2,*], V. Werner[1,3], N. Pietralla[1], S. Ilieva[1], T. Nikšić[4], D. Vretenar[4], P. Alexa[5], M. Thürauf[1], C. Bernards[3], A. Blanc[6], A. M. Bruce[7], R. B. Cakirli[8], N. Cooper[3], L. M. Fraile[9], G. de France[10], M. Jentschel[6], J. Jolie[11], U. Köster[6], W. Korten[12], T. Kröll[1], S. Lalkovski[13], H. Mach[14], N. Mărginean[15], P. Mutti[6], Z. Patel[13], V. Paziy[9], Zs. Podolyák[13], P. H. Regan[13,16], J.-M. Régis[11], O. J. Roberts[7], N. Saed-Samii[11], G. S. Simpson[17], T. Soldner[6], C. A. Ur[18,19], W. Urban[6,20], D. Wilmsen[10], and E. Wilson[21]
Published 6 January 2020

Phys. Rev. C **101**, 014313
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.101.014313

Delayed or absent $\pi(h_{11/2})^2$ alignment in ^{111}Xe

L. Capponi[1,2,3], J. F. Smith[1,2,*], P. Ruotsalainen[4], C. Scholey[4], P. Rahkila[4], L. Bianco[5], A. J. Boston[6], H. C. Boston[6], D. M. Cullen[7], X. Derkx[1,2], M. C. Drummond[6], T. Grahn[4], P. T. Greenlees[4], L. Grocutt[1,2], B. Hadinia[5], U. Jakobsson[4,†], D. T. Joss[6], R. Julin[4], S. Juutinen[4], M. Labiche[8], M. Leino[4], K. G. Leach[5,‡], C. McPeake[6], K. F. Mulholland[1,2], P. Nieminen[4], D. O'Donnell[1,2], E. S. Paul[6], P. Peura[4,§], M. Sandzelius[4], J. Sarén[4], B. Saygi[6,‖], J. Sorri[4,¶], S. Stolze[4,**], A. Thornthwaite[6], M. J. Taylor[7,††], and J. Uusitalo[4]
Published 21 January 2020

Phys. Rev. C **101**, 014314
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.101.014314
α-decay branching ratio of ^{180}Pt
J. G. Cubiss[1,*], R. D. Harding[1,2], A. N. Andreyev[1,3], N. Althubiti[4,5], B. Andel[6,7], S. Antalic[6], A. E. Barzakh[8], T. E. Cocolios[7,4], T. Day Goodacre[4,2,†], G. J. Farooq-Smith[4,7], D. V. Fedorov[8], V. N. Fedosseev[2], L. P. Gaffney[9,7,‡], L. Ghys[10,7], M. Huyse[7], K. M. Lynch[2], B. A. Marsh[2], Y. Martinez Palenzuela[7], P. L. Molkanov[8], R. E. Rossel[2,11], S. Rothe[2], M. D. Seliverstov[8], S. Sels[7,§], P. Spagnoletti[9], C. Van Beveren[7], P. Van Duppen[7], M. Veinhard[2], E. Verstraelen[7], and A. Zadvornaya[7,‖]
Published 21 January 2020

Phys. Rev. C **101**, 014318
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.101.014318
Novel chiral Hamiltonian and observables in light and medium-mass nuclei
V. Somà[1,*], P. Navrátil[2,†], F. Raimondi[3,4,‡], C. Barbieri[4,§], and T. Duguet[1,5,‖]
Published 22 January 2020

Phys. Rev. C **101**, 014606
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.101.014606
Fusion reaction studies for the ^{9}Be + ^{89}Y system at above-barrier energies
G. S. Li[1], M. L. Liu[1,*], D. Patel[1,†], Y. D. Fang[1], X. H. Zhou[1], Y. H. Zhang[1], A. Diaz-Torres[2], C. S. Palshetkar[3], J. Lubian[4], N. T. Zhang[1], J. G. Wang[1], B. S. Gao[1], Y. H. Qiang[1], S. Guo[1], Y. Zheng[1], K. L. Wang[1], K. K. Zheng[1], R. Li[1], and S. Mukherjee
Published 10 January 2020

Phys. Rev. C **101**, 014912
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.101.014912
Multiparticle correlation studies in pPb collisions at $\sqrt{s_{NN}}$=8.16 TeV
A. M. Sirunyan *et al.* (CMS Collaboration)
Published 23 January 2020

Phys. Rev. C **101**, 015208
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.101.015208
Exclusive π^0p electroproduction off protons in the resonance region at photon virtualities $0.4\text{GeV}^2 \le Q^2 \le 1\text{GeV}^2$
N. Markov[8,36,*], K. Joo[8], V. D. Burkert[36], V. I. Mokeev[36], L. C. Smith[41], M. Ungaro[36], S. Adhikari[11], M. J. Amaryan[30], G. Angelini[14], H. Atac[35], H. Avakian[36], C. Ayerbe Gayoso[43], N. A. Baltzell[36], L. Barion[15], M. Battaglieri[17], I. Bedlinskiy[26], I. Bedlinskiy[26], F. Benmokhtar[9], A. S. Biselli[10,5], F. Bossù[7], S. Boiarinov[36], W. J. Briscoe[14], W. K. Brooks[37,36], D. S. Carman[36], J. C. Carvajal[11], A. Celentano[17], P. Chatagnon[21], T. Chetry[25], P. L. Cole[24,36], M. Contalbrigo[15], V. Crede[11], G. Ciullo[15], A. D'Angelo[18,32], N. Dashyan[44], R. De Vita[17], E. De Sanctis[16], M. Defurne[7], A. Deur[36], S. Diehl[8], C. Djalali[29,34], R. Dupre[21], M. Ehrhart[21], A. El Alaoui[37], L. El Fassi[25], P. Eugenio[12], C. Evans[38,20], A. Filippi[19], Y. Ghandilyan[44], F. X. Girod[36], E. Golovatch[33], R. W. Gothe[34], K. A. Griffioen[43], M. Guidal[21], K. Hafidi[1], H. Hakobyan[37,44], M. Hattawy[30], T. B. Hayward[43], K. Hicks[29], M. Holtrop[27], Y. Ilieva[34,14], D. G. Ireland[39], B. S. Ishkhanov[33], E. L. Isupov[33], D. Jenkins[42], H. S. Jo[23], D. Keller[41], M. Khachatryan[30], A. Khanal[11], M. Khandaker[28,†], A. Kim[8], C. W. Kim[14], W. Kim[23], F. J. Klein[6], V. Kubarovsky[36,31], L. Lanza[18], M. Leali[38], K. Livingston[39], I. J. D. MacGregor[39], D. Marchand[21], V. Mascagna[38], B. McKinnon[39], T. Mineeva[37], M. Mirazita[16], P. Nadel-Turonski[36], S. Nanda[25], S. Niccolai[22,14], G. Niculescu[22,29], M. Osipenko[17], M. Paolone[35], L. L. Pappalardo[15], R. Paremuzyan[27], K. Park[23,‡], E. Pasyuk[36,2], W. Phelps[14], O. Pogorelko[26], J. W. Price[3], Y. Prok[30,41], D. Protopopescu[39,27], M. Ripani[17], D. Riser[8], A. Rizzo[18,32], G. Rosner[39], J. Rowley[29], F. Sabatié[7], C. Salgado[28],

R. A. Schumacher[5], Y. G. Sharabian[36], U. Shrestha[29], D. Sokhan[39], O. Soto[37], N. Sparveris[35], S. Stepanyan[36], P. Stoler[31], I. I. Strakovsky[14], S. Strauch[34,14], M. Taiuti[13,§], J. A. Tan[23], N. Tyler[34], L. Venturelli[38,20], H. Voskanyan[44], E. Voutier[21], R. Wang[21], X. Wei[36], M. H. Wood[4,34], and N. Zachariou[40] (The CLAS Collaboration)
Published 21 January 2020

Phys. Rev. C **101**, 015501
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.101.015501

Precision half-life measurement of ^{29}P
J. Long, M. Brodeur, M. Baines, D. W. Bardayan, F. D. Becchetti, D. Blankstein, C. Boomershine, D. P. Burdette, A. M. Clark, B. Frentz, S. L. Henderson, J. M. Kelly, J. J. Kolata, B. Liu, K. T. Macon, P. D. O'Malley, A. Pardo, C. Seymour, S. Y. Strauss, and B. Vande Kolk
Published 2 January 2020

Phys. Rev. C **101**, 015804
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.101.015804

γ-ray spectroscopy of astrophysically important states in ^{39}Ca
M. R. Hall[1,2,*], D. W. Bardayan[1], T. Baugher[3], A. Lepailleur[3], S. D. Pain[2], A. Ratkiewicz[3], S. Ahn[4], J. M. Allen[1], J. T. Anderson[5], A. D. Ayangeakaa[5], J. C. Blackmon[6], S. Burcher[7], M. P. Carpenter[5], S. M. Cha[8], K. Y. Chae[8], K. A. Chipps[2], J. A. Cizewski[3], M. Febbraro[2], O. Hall[1,9], J. Hu[1], C. L. Jiang[5], K. L. Jones[7], E. J. Lee[8], P. D. O'Malley[1], S. Ota[10], B. C. Rasco[6], D. Santiago-Gonzalez[6], D. Seweryniak[5], H. Sims[3,9], K. Smith[7], W. P. Tan[1], P. Thompson[2,7], C. Thornsberry[7], R. L. Varner[2], D. Walter[3], G. L. Wilson[6,11], and S. Zhu[5,12]
Published 29 January 2020

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2. News to Report

a. Successful 24th UK Monte Carlo User Group Meeting (MCNEG)

The latest UK Monte-Carlo particle transport user conference MCNEG2020 took place at the Culham Science Centre on the 14th and 15th January 2020. The conference was well received with approximately 30 attendees and 14 interesting talks on a diverse range of subjects relevant to Monte Carlo simulation: narrow applications such as microbeam dosimetry to exa-scale code development, and high fidelity radiation hazard modelling for the International Thermonuclear Experimental Reactor (ITER).

Lively discussions on common techniques across different fields of research were had. New comers to MCNEG found the meeting friendly and were able to ask for guidance on correct approaches to Monte Carlo particle transport problems. At the end of the talks CCFE/UKAEA were kind to offer a tour of the Joint European Torus (JET) fusion research facility. Proposals for hosting the next MCNEG conference are open, please contact mcneg@awe.co.uk for further details.

Contributed by Simon Rice (AWE)

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3. Outreach Activity

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4. Media Interactions

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