UK Nuclear Activity

February 2019 Issue 68

In this issue,

Newsletter archive: http://npg.dl.ac.uk/OutreachNewsletter/index.html

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*1. Nuclear Physics Publications for February**

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.

Phys. Lett. B 788, 166 (2019) https://www.sciencedirect.com/science/article/pii/S0370269318308232
Transverse momentum spectra and nuclear modification factors of charged particles in Xe–Xe collisions at $\sqrt{s_{NN}}$=5.44 TeV
ALICE Collaboration, UK Authors: H. A. Andrews, L. S. Barnby, M. Borri, M. Chartier, D. Evans, K. L. Graham, C. Hills, J.P. Iddon, P. G. Jones, A. Jusko, M. Krivda, R. C. Lemmon, R. Lietava, S. W. Lindsay, O. Villalobos Baillie, E. Willsher, N. Zardoshti
*Published 10 January 2019

Phys. Lett. B 788, 505 (2019) https://www.sciencedirect.com/science/article/pii/S0370269318308475
Dielectron and heavy-quark production in inelastic and high-multiplicity proton–proton collisions at $\sqrt{s}$=13TeV
ALICE Collaboration, UK Authors: H. A. Andrews, L. S. Barnby, M. Borri, M. Chartier, D. Evans, K. L. Graham, C. Hills, J.P. Iddon, O. Jevons, P. G. Jones, A. Jusko, M. Krivda, J. Kvapil, R. C. Lemmon, R. Lietava, S. W. Lindsay, O. Villalobos Baillie, E. Willsher, N. Zardoshti
*Published 10 January 2019

NIM A 916, 238 (2019) https://www.sciencedirect.com/science/article/pii/S0168900218317753
Neutron detection and γ-ray suppression using artificial neural networks with the liquid scintillators BC-501A and BC-537
P.-A.Söderström[abcd], G.Jaworski[efg], J.J.Valiente Dobón[e], J.Nyberg[d], J.Agramunt[h], G.de Angelis[e], S.Carturan[e], J.Egea[ih], M.N.Erduran[j], S.Ertürk[k], G.de France[l], A.Gadea[h], A.Goasduff[e], V.González[i], K.Hadyńska-Klęk[e], T.Hüyük[h], V.Modamio[e], M.Moszynski[m], A.Di Nitto[no], M.Palacz[g], N.Pietralla[b], E.Sanchis[i], D.Testov[p], A.Triossi[e], R.Wadsworth[q]
Published 1 February 2019

*Also including missed publications from previous months

Phys. Rev. C 99, 024304 (2019) https://journals.aps.org/prc/abstract/10.1103/PhysRevC.99.024304
β decay of ^{133}In: γ emission from neutron-unbound states in ^{133}Sn
M. Piersa[1,*], A. Korgul[1,†], L. M. Fraile[2,3], J. Benito[2], E. Adamska[1], A. N. Andreyev[4], R. Álvarez-Rodríguez[5], A. E. Barzakh[6], G. Benzoni[7], T. Berry[8], M. J. G. Borge[3,9], M. Carmona[2], K. Chrysalidis[3], J. G. Correia[3,10], C. Costache[11], J. G. Cubiss[3,4], T. Day Goodacre[3,12], H. De Witte[13], D. V. Fedorov[6], V. N. Fedosseev[3], G. Fernández-Martínez[14], A. Fijałkowska[1], M. Fila[1], H. Fynbo[15], D. Galaviz[16], P. T. Greenlees[17,18], R. Grzywacz[19,20], L. J. Harkness-Brennan[21], C. Henrich[14], M. Huyse[13], A. Illana[13], Z. Janas[1], K. Johnston[3], D. S. Judson[21], V. Karanyonchev[22], M. Kicińska-Habior[1], J. Konki[17,18], J. Kurcewicz[3], I. Lazarus[23], R. Lică[3,11], H. Mach[24,‡], M. Madurga[3,19], I. Marroquín[9], B. Marsh[3], M. C. Martínez[2], C. Mazzocchi[1], N. Mărginean[11], R. Mărginean[11], K. Miernik[1], C. Mihai[11], E. Nácher[9], A. Negret[11], B. Olaizola[25,§], R. D. Page[21], S. Paulaskalas[19], S. Pascu[11], A. Perea[9], V. Pucknell[23], P. Rahkila[17,18], E. Rapisarda[3], J.-M. Régis[22], F. Rotaru[11], S. Rothe[3], V. Sánchez-Tembleque[2], G. Simpson[26], Ch. Sotty[11,13], L. Stan[11], M. Stănoiu[11], M. Stryjczyk[1,13], O. Tengblad[9], A. Turturica[11], J. M. Udías[2], P. Van Duppen[13], V. Vedia[2], A. Villa[2], S. Viñals[9], R. Wadsworth[4], W. B. Walters[27], and N. Warr[22] (IDS Collaboration)
Published 5 February 2019

MNRAS 485, 620 (2019) https://academic.oup.com/mnras/article-abstract/485/1/620/5307894
Nucleosynthetic yields from neutron stars accreting in binary common envelopes
J Keegans, C L Fryer, S W Jones, B Côté, K Belczynski, F Herwig, M Pignatari, A M Laird, C Aa Diget
Published 6 February 2019

NIM A 925, 133 (2019) https://www.sciencedirect.com/science/article/pii/S0168900219301743
Commissioning of the BRIKEN detector for the measurement of very exotic β-delayed neutron emitters
A.Tolosa-Delgado[a], J.Agramunt[a], J.L.Tain[a], A.Algora[ar], C.Domingo-Pardo[a], A.I.Morales[a], B.Rubio[a], A.Tarifeño-Saldivia[b], F.Calviño[b], G.Cortes[b], N.T.Brewer[c], B.C.Rasco[c], K.P.Rykaczewski[c], D.W.Stracener[c], J.M.Allmond[c], R.Grzywacz[d], R.Yokoyama[d], M.Singh[d], T.King[d], M.Madurga[d], S.Nishimura[e], V.H.Phong[es], S.Go[e], J.Liu[et], K.Matsui[ef], H.Sakurai[ef], G.G.Kiss[er], T.Isobe[e], H.Baba[e], S.Kubono[e], N.Fukuda[e], D.S.Ahn[e], Y.Shimizu[e], T.Sumikama[e], H.Suzuki[e], H.Takeda[e], P.A.Söderström[e], M.Takechi[g], C.G.Bruno[h], T.Davinson[h], C.J.Griffin[h], O.Hall[h], D.Kahl[h], P.J.Woods[h], P.J.Coleman-Smith[i], M.Labiche[i], I.Lazarus[i], P.Morrall[i], V.F. E.Pucknell[i], J.Simpson[i], S.L.Thomas[j], M.Prydderch[j], L.J.Harkness-Brennan[k], R.D.Page[k], I.Dillmann[lm], R.Caballero-Folch[l], Y.Saito[l]A.Estrade[n], N.Nepal[n], F.Montes[o], G.Lorusso[pqe], J.Liang[u], S.Bae[v], J.Ha[ve], B.Moon[w], the BRIKEN collaboration
Published *online* 6 February 2019

Phys. Rev. Lett. 122, 052501 (2019) https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.052501
First Spectroscopy of the Near Drip-line Nucleus ^{40}Mg
H. L. Crawford[1,*], P. Fallon[1], A. O. Macchiavelli[1], P. Doornenbal[2], N. Aoi[3], F. Browne[2], C. M. Campbell[1], S. Chen[2], R. M. Clark[1], M. L. Cortés[2], M. Cromaz[1], E. Ideguchi[3], M. D. Jones[1,†], R. Kanungo[4,5], M. MacCormick[6], S. Momiyama[7], I. Murray[6], M. Niikura[7], S. Paschalis[8], M. Petri[8], H. Sakurai[2,7], M. Salathe[1], P. Schrock[9], D. Steppenbeck[9], S. Takeuchi[2,10], Y. K. Tanaka[11], R. Taniuchi[7], H. Wang[2], and K. Wimmer[7]
Published 7 February 2019

Phys. Lett. B 798, 7 (2019) https://www.sciencedirect.com/science/article/pii/S0370269318309535
Deuteron photodisintegration by polarized photons in the region of the $d^*(2380)$
M.Bashkanov[a], S.Kay[b]D.P.Watts[a], C.Mullen[c], S.Abt[d], P.Achenbach[e], P.Adlarson[e], F.Afzal[f], Z.Ahmed[b], C.S.Akondi[g], J.R.M.Annand[c], H.J.Arends[e], R.Beck[f], M.Biroth[e], N.Borisov[h], A.Braghieri[i], W.J.Briscoe[j], F.Cividini[e], C.Collicott[k], S.Costanza[li], A.Denig[e], E.J.Downie[j], P.Drexler[me], S.Garni[d], D.I.Glazier[c], I.Gorodnov[h], W.Gradl[e], M.Günther[d], D.Gurevich[n], L.Heijkenskjöld[e], D.Hornidge[o], G.M.Huber[b], A.Käser[d], V.L.Kashevarov[eh], M.Korolija[p], B.Krusche[d], A.Lazarev[h], K.Livingston[c], S.Lutterer[d], I.J.D.MacGregor[c], R.Macrae[c], D.M.Manley[g], P.P.Martel[eo], R.Miskimen[q], E.Mornacchi[e], A.Neganov[h], A.Neiser[e], M.Ostrick[e], P.B.Otte[e], D.Paudyal[b], P.Pedroni[i], A.Powell[c], S.N.Prakhov[r], G.Ron[s], T.Rostomyan[d1], A.Sarty[k], C.Sfienti[e], V.Sokhoyan[e], K.Spieker[f], O.Steffen[e], I.I.Strakovsky[j], T.Strub[d], I.Supek[p], A.Thiel[f], M.Thiel[e], A.Thomas[e], Yu.A.Usov[h], S.Wagner[e], N.K.Walford[d], D.Werthmüller[a], J.Wettig[e], M.Wolfes[e], L.A.Zana[t]
Published 10 February 2019

Phys. Rev. C 99, 021302(R) https://journals.aps.org/prc/abstract/10.1103/PhysRevC.99.021302
Toward the limit of nuclear binding on the N=Z line: Spectroscopy of ^{96}Cd
P. J. Davies[1], J. Park[2,3,4], H. Grawe[5], R. Wadsworth[1], R. Gernhäuser[6], R. Krücken[2,3], F. Nowacki[7], D. S. Ahn[8], F. Ameil[5], H. Baba[8], T. Bäck[9], B. Blank[10], A. Blazhev[11], P. Boutachkov[12,5], F. Browne[8,13], I. Čeliković[14,15], M. Dewald[11], P. Doornenbal[8], T. Faestermann[6], Y. Fang[16], G. de France[14], N. Fukuda[8], A. Gengelbach[17], J. Gerl[5], J. Giovinazzo[10], S. Go[18], N. Goel[12,5], M. Górska[5], E. Gregor[12,5], H. Hotaka[19], S. Ilieva[12], N. Inabe[8], T. Isobe[8], D. G. Jenkins[1], J. Jolie[11], H. S. Jung[18], A. Jungclaus[20], D. Kameda[8], G. D. Kim[21], Y.-K. Kim[21], I. Kojouharov[5], T. Kubo[8], N.

Kurz[5], M. Lewitowicz[14], G. Lorusso[8,22,23], D. Lubos[6,8], L. Maier[6], E. Merchan[12,5], K. Moschner[11,8], D. Murai[8], F. Naqvi[24], H. Nishibata[16], D. Nishimura[25], S. Nishimura[8], I. Nishizuka[26], Z. Patel[8,23], N. Pietralla[12], M. M. Rajabali[2], S. Rice[8,23], H. Sakurai[18], H. Schaffner[5], Y. Shimizu[8], L. F. Sinclair[1,8], P.-A. Söderström[8,5], K. Steiger[6], T. Sumikama[26], H. Suzuki[8], H. Takeda[8], J. Taprogge[20], P. Thöle[11], S. Valder[1], Z. Wang[2], N. Warr[11], H. Watanabe[8,27], V. Werner[12,24], J. Wu[8,28], Z. Y. Xu[8], A. Yagi[29], K. Yoshinaga[8], and Y. Zhu[30]
Published 11 February 2019

Phys. Rev. Lett. 122, 062501 (2019) https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.062501
Experimental Evidence for Transverse Wobbling in ^{105}Pd
J. Timár[1,*], Q. B. Chen[2], B. Kruzsicz[1], D. Sohler[1], I. Kuti[1], S. Q. Zhang[3], J. Meng[3], P. Joshi[4], R. Wadsworth[4], K. Starosta[5], A. Algora[1,6], P. Bednarczyk[7], D. Curien[8], Zs. Dombrádi[1], G. Duchêne[8], A. Gizon[9], J. Gizon[9], D. G. Jenkins[4], T. Koike[10], A. Krasznahorkay[1], J. Molnár[1], B. M. Nyakó[1], E. S. Paul[11], G. Rainovski[12], J. N. Scheurer[13], A. J. Simons[4], C. Vaman[14], and L. Zolnai[1]
Published 12 February 2019

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2. News to Report

a. UK-Russia Workshop: Nuclear Theory for Nuclear Experiments

The University of Surrey hosted a British Council UK-Russia Researchers Link workshop on "Nuclear Theory for Nuclear Experiments" between 18-21 December 2018. 30 people attended the meeting. The British Council supported the participation of 10 Russian and 13 UK early career scientists. The workshop discussed how new developments in nuclear theory can help interpret experiments carried out in laboratories world-wide. The talks can be accessed here: https://www.surrey.ac.uk/events/20181218-nuclear-theory-nuclear-experiments

Contribution by Arnau Rios Huguet a.rios@surrey.ac.uk (Surrey)

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3. Outreach Activity

Outreach Talks

Arnau Rios gave the Institute of Physics South Central Branch lecture on 12th February 2019 at the University of Surrey. The title of the talk was “Zombie degenerate stars: what can we learn from the stellar graveyard?". There were about 140 attendees, including members of the general public as well as Surrey students and staff. The talk used Polleverywhere to create a quiz competition within the audience, which provided an interactive element to the talk. 60% of the audience guessed correctly the size of a nucleus, but only 30% knew that about 150 isotopes have been discovered by Surrey physicists.

Contribution by Arnau Rios Huguet a.rios@surrey.ac.uk (Surrey)

Elizabeth Cunningham gave the Institute of Physics South Central Branch lecture at the Bournemouth Natural Sciences Society on 26th February 2019. The talk on Stellar Evolution – the life cycle of a star, was attended by about 65 people and generated lots of interesting questions including: ‘why is the crab nebula called the crab nebula when it looks like a bear!?’.
Contribution by Elizabeth Cunningham Elizabeth.Cunningham@stfc.ac.uk (STFC/Surrey)

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4. Media Interactions

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