



UK Nuclear Activity

May 2015 Issue 23

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

Nuclear Physics Public Engagement Website: www.stfc.ac.uk/NuclearPhysicsForYou
[Nuclear Physics Outreach Poster](#) – order hardcopies from STFC free of charge [here](#)

1. Nuclear Physics Publications for May*

If you are publishing a paper that you think would be of media value please let Wendy Ellison wendy.ellison@stfc.ac.uk, STFC Press Officer, know. 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.

Acta Physica Polonica B Vol. 46, No. 3 (2015)

[Proc. Zakopane Conference on Nuclear Physics, September 1-7 2014. Zakopane, Poland](#)

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Recent Results at Ultrahigh Spin: Terminating States and Beyond in Mass 160 Rare-earth Nuclei

E.S. Paul, J.M. Rees, P. Hampson, M.A. Riley, J. Simpson, A.D. Ayangeakaa, J.S. Baron, M.P. Carpenter, C.J. Chiara, U. Garg, D.J. Hartley, C.R. Hoffman, R.V.F. Janssens, F.G. Kondev, T. Lauritsen, P.J.R. Mason, J. Matta, S.L. Miller, P.J. Nolan, J. Ollier, M. Petri, D.C. Radford, J.P. Revill, X. Wang, S. Zhu, I. Ragnarsson

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Structure of ^{26}Na via a Novel Technique Using (d,p γ) with a Radioactive ^{25}Na Beam

W.N. Catford, I.C. Celik, G.L. Wilson, A. Matta, N.A. Orr, C.Aa. Diget, P. Adsley, H. Al-Falou, R. Ashley, R.A.E. Austin, G.C. Ball, J.C. Blackmon, A.J. Boston, H.C. Boston, S.M. Brown, D.S. Cross, M. Djongolov, T.E. Drake, U. Hager, S.P. Fox, B.R. Fulton, N. Galinski, A.B. Garnsworthy, G. Hackman, D. Jamieson, R. Kanungo, K. Leach, J-P. Martin, J.N. Orce, C.J. Pearson, M. Porter-Peden, F. Sarazin, S. Sjue, C. Sumithrarachchi, C.E. Svensson, S. Triambak, C. Unsworth, R. Wadsworth, S.J. Williams

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Recent Direct Reaction Experimental Studies with Radioactive Tin Beams

K.L. Jones, S. Ahn, J.M. Allmond, A. Ayres, D.W. Bardayan, T. Baugher, D. Bazin, J.S. Berryman, A. Bey, C. Bingham, L. Cartegni, G. Cerizza, K.Y. Chae, J.A. Cizewski, A. Gade, A. Galindo-Uribarri, R.F. Garcia-Ruiz, R. Grzywacz, M.E. Howard, R.L. Kozub, J.F. Liang, B. Manning, M. Matoš, S. McDaniel, D. Miller, C.D. Nesaraja, P.D. O'Malley, S. Padgett, E. Padilla-Rodal, S.D. Pain, S.T. Pittman, D.C. Radford, A. Ratkiewicz, K.T. Schmitt, A. Shore, M.S. Smith, D.W. Stracener, S.R. Stroberg, J. Tostevin, R.L. Varner, D. Weisshaar, K. Wimmer, R. Winkler

*Also including missed publications from previous months.

Edited by Elizabeth Cunningham, STFC Particle and Nuclear Physics Outreach Officer.

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Isomeric Ratios in ^{206}Hg

T. Alexander, Zs. Podolyák, M.L. Cortes, J. Gerl, D. Rudolph, L.G. Sarmiento, F. Ameil, T. Arici, D. Bazzacco, Ch. Bauer, M.A. Bentley, A. Blazhev, M. Bowry, P. Boutachkov, R. Carroll, C. Fahlander, A. Gadea, J. Gellanki, W. Gelletly, A. Givechev, N. Goel, P. Golubev, M. Górska, A. Gottardo, E. Gregor, G. Guastalla, T. Habermann, M. Hackstein, A. Jungclaus, I. Kojouharov, W. Korten, S. Kumar, N. Kurz, N. Lalović, M. Lettmann, C. Lizarazo, C. Louchart, S. Mandal, E. Merchán, C. Michelagnoli, Th. Möller, K. Moschner, Z. Patel, N. Pietralla, S. Pietri, D. Ralet, M. Reese, P.H. Regan, P. Reiter, H. Schaffner, P. Singh, C. Stahl, R. Stegmann, O. Stezowski, J. Taprogge, P. Thöle, P.M. Walker, O. Wieland, A. Wendt, E. Wilson, R. Wood, H.-J. Wollersheim

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Structure of ^{207}Pb Populated in $^{208}\text{Pb} + ^{208}\text{Pb}$ Deep-inelastic Collisions

C.M. Shand, E. Wilson, Zs. Podolyák, H. Grawe, B.A. Brown, B. Fornal, R.V.F. Janssens, M. Bowry, M. Bunce, M.P. Carpenter, R.J. Carroll, C.J. Chiara, N. Cieplicka-Oryńczak, A.Y. Deo, G.D. Dracoulis, C.R. Hoffman, R.S. Kempley, F.G. Kondev, G.J. Lane, T. Lauritsen, G. Lotay, M.W. Reed, P.H. Regan, C. Rodriguez-Triguero, D. Seweryniak, B. Szpak, P.M. Walker, S. Zhu

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Gamow–Teller Excitations Studied by Weak and Strong Interactions

Y. Fujita, B. Rubio, T. Adachi, B. Blank, H. Fujita, W. Gelletly, F. Molina, S.E.A. Orrigo

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Competing Decay Modes of a High-spin Isomer in the Proton-unbound Nucleus ^{158}Ta

R.J. Carroll, R.D. Page, D.T. Joss, J. Uusitalo, I.G. Darby, K. Andgren, B. Cederwall, S. Eeckhaudt, T. Grahn, C. Gray-Jones, P.T. Greenlees, B. Hadinia, P.M. Jones, R. Julin, S. Juutinen, M. Leino, A.-P. Leppänen, M. Nyman, D. O'Donnell, J. Pakarinen, P. Rahkila, M. Sandzelius, J. Sarén, C. Scholey, D. Seweryniak, J. Simpson

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Collinear Laser Spectroscopy on Neutron-rich Mn Isotopes Approaching $N = 40$

H. Heylen, C. Babcock, J. Billowes, M.L. Bissell, K. Blaum, P. Campbell, B. Cheal, R.F. Garcia Ruiz, Ch. Geppert, W. Gins, K. Kreim, I.D. Moore, R. Neugart, G. Neyens, W. Nörtershäuser, J. Papuga, D.T. Yordanov

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Gamma-ray Spectroscopy in the Vicinity of ^{108}Zr

F. Browne, A.M. Bruce, T. Sumikama, I. Nishizuka, S. Nishimura, P. Doornenbal, G. Lorusso, Z. Patel, S. Rice, L. Sinclair, P.-A. Söderström, H. Watanabe, J. Wu, Z.Y. Xu, H. Baba, N. Chiga, R. Carroll, R. Daido, F. Didierjean, Y. Fang, G. Gey, E. Ideguchi, N. Inabe, T. Isobe, D. Kameda, I. Kojouharov, N. Kurz, T. Kubo, S. Lalkovski, Z. Li, R. Lozeva, N. Naoki, H. Nishibata, A. Odahara, Zs. Podolyák, P.H. Regan, O.J. Roberts, H. Sakurai, H. Schaffner, G.S. Simpson, H. Suzuki, H. Takeda, M. Tanaka, J. Taprogge, V. Werner, O. Wieland, A. Yagi

Published March 2015*

[Proceedings of the ISTROS 2013 International Conference](#)

SHAPE COEXISTENCE IN THE LEAD REGION FROM A GROUND-STATE PERSPECTIVE

Thomas Elias Cocolios

Published April 2015*

Phys. Rev. C 91, 044322 (2015) <http://journals.aps.org/prc/abstract/10.1103/PhysRevC.91.044322>

Oblately deformed isomeric proton-emitting state in ^{151}Lu

[M. J. Taylor](#)¹, [D. M. Cullen](#)¹, [M. G. Procter](#)¹, [A. J. Smith](#)¹, [A. McFarlane](#)¹, [V. Twist](#)¹, [G. A. Alharshan](#)¹, [L. S. Ferreira](#)², [E. Maglione](#)³, [K. Auranen](#)⁴, [T. Grahn](#)⁴, [P. T. Greenlees](#)⁴, [K. Hauschild](#)^{4,5}, [A. Herzan](#)⁴, [U. Jakobsson](#)^{4,*}, [R. Julin](#)⁴, [S. Juutinen](#)⁴, [S. Ketelhut](#)⁴, [J. Konki](#)⁴, [M. Leino](#)⁴, [A. Lopez-Martens](#)^{4,5}, [J. Pakarinen](#)⁴, [J. Partanen](#)⁴, [P. Peura](#)⁴, [P. Rahkila](#)⁴, [S. Rinta-Antila](#)⁴, [P. Ruotsalainen](#)⁴, [M. Sandzelius](#)⁴, [J. Saren](#)⁴, [C. Scholey](#)⁴, [J. Sorri](#)⁴, [S. Stolze](#)⁴, [J. Uusitalo](#)⁴, and [M. Doncel](#)⁶

Published 24 April 2015*

Phys. Rev. A 91, 042513 (2015) <http://journals.aps.org/pr/abstract/10.1103/PhysRevA.91.042513>

Convergence of the hyperspherical-harmonics expansion with increasing number of particles for bosonic systems. II. Inclusion of the three-body force

[N. K. Timofeyuk](#)

Published 30 April 2015*

J. Phys.: Conf. Ser. 606 012017 (2015) <http://iopscience.iop.org/1742-6596/606/1/012017>

The AGATA Spectrometer: next generation gamma-ray spectroscopy

J Simpson (On behalf of the AGATA collaboration)

Published May 2015

Phys. Rev. C 91, 054301 (2015) <http://journals.aps.org/prc/abstract/10.1103/PhysRevC.91.054301>

High-spin terminating states in the $N=88$ ^{155}Ho and ^{156}Er isotones

[J. M. Rees](#)¹, [E. S. Paul](#)^{1,*}, [J. Simpson](#)², [M. A. Riley](#)³, [A. D. Ayangeakaa](#)^{4,†}, [M. P. Carpenter](#)⁵, [C. J. Chiara](#)^{5,6,‡}, [U. Garg](#)⁴, [P. Hampson](#)¹, [D. J. Hartley](#)⁷, [C. R. Hoffman](#)⁵, [R. V. F. Janssens](#)⁵, [F. G. Kondev](#)⁸, [T. Lauritsen](#)⁵, [P. J. R. Mason](#)², [J. Matta](#)⁴, [S. L. Miller](#)³, [P. J. Nolan](#)¹, [J. Ollier](#)², [M. Petri](#)^{9,§}, [D. C. Radford](#)¹⁰, [J. P. Revill](#)¹, [X. Wang](#)^{3,||}, [S. Zhu](#)⁵, [J. Gellanki](#)¹¹, and [I. Ragnarsson](#)¹¹

Published 5 May 2015

Phys. Rev. C 91, 054604 (2015) <http://journals.aps.org/prc/abstract/10.1103/PhysRevC.91.054604>

Spin dependence of the incident channel distorted wave in the theory of the $A(d,p)B$ reaction

[R. C. Johnson](#)

Published 6 May 2015

Phys. Rev. Lett. 114, 192501 (2015) <http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.114.192501>

β -Decay Half-Lives of 110 Neutron-Rich Nuclei across the $N=82$ Shell Gap: Implications for the Mechanism and Universality of the Astrophysical r Process

[G. Lorusso](#)^{1,2,3}, [S. Nishimura](#)^{1,4}, [Z. Y. Xu](#)^{1,5,6}, [A. Jungclauss](#)⁷, [Y. Shimizu](#)¹, [G. S. Simpson](#)⁸, [P.-A. Söderström](#)¹, [H. Watanabe](#)^{1,9}, [F. Browne](#)^{1,10}, [P. Doornenbal](#)¹, [G. Gey](#)^{1,8}, [H. S. Jung](#)¹¹, [B. Meyer](#)¹², [T. Sumikama](#)¹³, [J. Taprogge](#)^{1,7,14}, [Zs. Vajta](#)^{1,15}, [J. Wu](#)^{1,16}, [H. Baba](#)¹, [G. Benzoni](#)¹⁷, [K. Y. Chae](#)¹⁸, [F. C. L. Crespi](#)^{17,19}, [N. Fukuda](#)¹, [R. Gernhäuser](#)²⁰, [N. Inabe](#)¹, [T. Isobe](#)¹, [T. Kajino](#)^{4,21}, [D. Kameda](#)¹, [G. D. Kim](#)²², [Y.-K. Kim](#)^{22,23}, [I. Kojouharov](#)²⁴, [F. G. Kondev](#)²⁵, [T. Kubo](#)¹, [N. Kurz](#)²⁴, [Y. K. Kwon](#)²², [G. J. Lane](#)²⁶, [Z. Li](#)¹⁶, [A. Montaner-Piza](#)²⁷, [K. Moschner](#)²⁸, [F. Naqvi](#)²⁹, [M. Niikura](#)⁵, [H. Nishibata](#)³⁰, [A. Odahara](#)³⁰, [R. Orlandi](#)³¹, [Z. Patel](#)³, [Zs. Podolyák](#)³, [H. Sakurai](#)^{1,5}, [H. Schaffner](#)²⁴, [P. Schury](#)¹, [S. Shibagaki](#)^{4,21}, [K. Steiger](#)²⁰, [H. Suzuki](#)¹, [H. Takeda](#)¹, [A. Wendt](#)²⁸, [A. Yagi](#)³⁰, and [K. Yoshinaga](#)³²

Published 11 May 2015

Phys. Rev. Lett. 114, 202501 (2015) <http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.114.202501>

Probing the $N=32$ Shell Closure below the Magic Proton Number $Z=20$: Mass Measurements of the Exotic Isotopes $^{52,53}\text{K}$

[M. Rosenbusch](#)¹, [P. Ascher](#)², [D. Atanasov](#)², [C. Barbieri](#)³, [D. Beck](#)⁴, [K. Blaum](#)², [Ch. Borgmann](#)², [M. Breitenfeldt](#)⁵, [R. B. Cakiri](#)^{2,6}, [A. Cipollone](#)³, [S. George](#)², [F. Herfurth](#)⁴, [M. Kowalska](#)⁷, [S. Kreim](#)^{2,7}, [D. Lunney](#)⁸, [V. Manea](#)⁸, [P. Navrátil](#)⁹, [D. Neidherr](#)⁴, [L. Schweikhard](#)¹, [V. Somà](#)^{10,11,12}, [J. Stanja](#)¹³, [F. Wienholtz](#)¹, [R. N. Wolf](#)^{1,2}, and [K. Zuber](#)¹³

Published 20 May 2015

2. News to Report

a. Liverpool PhD student awarded EPS

Nuclear Physics European Thesis prize.

The Nuclear Physics Division of the EPS has awarded the 2012-2014 PhD Prize jointly to Dr. Jose Manuel Alarcón Soriano, Dr. Liam Gaffney and Dr. Christopher Walz. Congratulations to Liam Gaffney who did his PhD at the University of Liverpool and is now doing a post-doc at the University West of Scotland. His 2012 thesis was entitled: "Octupole collectivity in ^{220}Rn and ^{224}Ra ". This work was published in the 2013 Nature paper, "Studies of pear-shaped nuclei using accelerated radioactive beams" Nature (2013)

Volume: 497, Pages:199–204

[doi:10.1038/nature12073](https://doi.org/10.1038/nature12073).

The winners of the PhD Prize will be presented with diplomas on the final day of the 3rd European Nuclear Physics Conference (Groningen 31 August - 4 September 2015) where they will give a plenary invited talk on their work. The winners will also receive 1000 EUR, to cover their conference costs, through the generous sponsorship from the organisers of the conference.

b. EMIS XVII Conference. The International Conference on Electromagnetic Separators and Related Topics just took place in Grand Rapids, MI. This conference is the opportunity to showcase the progress in radioactive ion

beam technologies, for the production, the handling, and the study of our favourite isotopes at the many facilities worldwide. This week-long conference showed a lot of exciting prospects, featuring amongst others the TSR@ISOLDE by Peter Butler (University of Liverpool), and was concluded by a visit of the

new site for the FRIB facility in East Lansing, MI.

The next edition of this conference will be organised by CERN near Geneva in September 2018.

Contribution by Thomas Cocolios
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(Manchester)

3. Outreach Activity

Outreach Talk

On 1st May Bill Gelletly gave a talk entitled “Living in a radioactive world” at the Fleet U3A to ~100 people.

Contribution by Bill Gelletly
w.gelletly@surrey.ac.uk (Surrey)

Outreach Poster - Reminder

The new [Nuclear Physics Outreach Poster](#) – ‘Inside the atom: Nuclear activity in the UK’ is available to aid your outreach activities. The webform to order hardcopies from STFC free of charge can be found [here](#). The nuclear physics poster is the third publication in the ‘Popular Science and Schools and Education: Particle Physics & Nuclear Physics’ section.

4. Media Interactions

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