



UK Nuclear Activity

September 2018 Issue 63

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

Nuclear Physics Public Engagement Website: [NuclearPhysicsForYou](#)

[Nuclear Physics Outreach Poster](#) – order hardcopies from STFC free of charge [here](#)

1. Nuclear Physics Publications for September*

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.

Eur. Phys. J. A 54: 142 (2018) <https://rd.springer.com/article/10.1140/epja/i2018-12575-5>

Development of a two-stage detection array for low-energy light charged particles in nuclear astrophysics applications

M. Romoli, L. Morales-Gallegos, M. Aliotta, C. G. Bruno, R. Buompane, A. D’Onofrio, T. Davinson, M. De Cesare, A. Di Leva, P. Di Meo, J. Duarte, L. Gasques, L. Gialanella, G. Imbriani, G. Porzio, D. Rapagnani, A. Vanzanella

*Published August 2018

Eur. Phys. J. A 54: 145 (2018) <https://rd.springer.com/article/10.1140%2Fepja%2Fi2018-12581-7>

M1 and E2 transition rates from core-excited states in semi-magic ⁹⁴Ru

A. Ertoprak, B. Cederwall, C. Qi, M. Doncel, U. Jakobsson, B. M. Nyakó, G. Jaworski, P. Davies, G. de France, I. Kuti, D. R. Napoli, R. Wadsworth, S. S. Ghugre, R. Raut, B. Akkus, H. Al Azri, A. Algora, G. de Angelis, A. Atac, T. Bäck, A. Boso, E. Clément, D. M. Debenham, Zs. Dombrádi, S. Ertürk, A. Gadea, F. Ghazi Moradi, A. Gottardo, T. Hüyük, E. Ideguchi, H. Li, C. Michelagnoli, V. Modamio, J. Nyberg, M. Palacz, C. M. Petrache, F. Recchia, M. Sandzelius, M. Siciliano, J. Timár, J. J. Valiente-Dobón, Z. G. Xiao

Published September 2018

NIM A 901, 14 (2018) <https://www.sciencedirect.com/science/article/pii/S0168900218306715>

Optimising resistive charge-division strip detectors for low energy charged-particle spectroscopy

[R.Smith¹](#), [J.Bishop](#), [Tz.Kokalova](#), [C.Wheldon](#), [M.Freer](#), [N.Curtis](#), [Z.Haider](#), [D.J.Parker](#)

Published 1 September 2018

Phys. Rev. Lett. 121, 102501 (2018) <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.121.102501>

From Calcium to Cadmium: Testing the Pairing Functional through Charge Radii Measurements of Cd100–130

M. Hammen¹, W. Nörtershäuser^{1,2,*}, D. L. Balabanski^{3,†}, M. L. Bissell^{6,8}, K. Blaum⁵, I. Budinčević⁶, B. Cheal⁷, K. T. Flanagan⁸, N. Frömmgen¹, G. Georgiev⁹, Ch. Geppert^{1,2}, M. Kowalska⁴, K. Kreim⁵, A. Krieger^{1,2}, W. Nazarewicz¹⁰, R. Neugart^{1,5}, G. Neyens^{4,6}, J. Papuga⁶, P.-G. Reinhard¹¹, M. M. Rajabali^{6,‡}, S. Schmidt^{1,2}, and D. T. Yordanov^{4,5,12}

Published 4 September 2018

Phys. Rev. C 98, 034303 (2018) <https://journals.aps.org/prc/abstract/10.1103/PhysRevC.98.034303>
Lifetime measurements in ¹⁵⁶Gd

A. Aprahamian^{1,*}, R. C. de Haan¹, S. R. Lesher^{1,2}, C. Casarella¹, A. Stratman¹, H. G. Börner³, H. Lehmann³, M. Jentschel³, and A. M. Bruce⁴

Published 6 September 2018

Phys. Lett. B 784, 392 (2018) <https://www.sciencedirect.com/science/article/pii/S0370269318305239>
Spectroscopy of ^{65,67}₂₅Mn: Strong coupling in the $N = 40$ “island of inversion”

X.Y.Liu^{ab}, Z.Liu^a, B.Ding^a, P.Doornenbal^c, A.Obertelli^{cde}, S.M.Lenzi^f, P.M.Walker^g, L.X.Chung^h, B.D.Linh^h, G.Auথেlet^d, H.Baba^c, D.Calvet^d, F.Château^d, A.Corsi^d, A.Delbart^d, J.-M.Gheller^d, A.Gillibert^d, T.Isobe^c, V.Lapoux^d, M.Matsushitaⁱ, S.Momiyama^{aj}, T.Motobayashi^c, M.Niikura^j, F.Nowacki^k, H.Otsu^c, C.Péron^d, A.Peyaud^d, E.C.Pollacco^d, J.-Y.Roussé^d, H.Sakurai^{aj}, M.Sasano^c, Y.Shiga^{cl}, S.Takeuchi^c, R.Taniuchi^{aj}, T.Uesaka^c, H.Wang^c, K.Yoneda^c, Y.H.Lam^a, T.H.Huang^a, M.D.Sun^{ab}, W.Q.Zhang^{ab}, H.Y.Lu^{ab}, D.S.Hou^{ab}, F.Browne^m, Zs.Dombradiⁿ, S.Franchoo^o, F.Giacoppo^p, A.Gottardo^o, K.Hadynska-Klek^p, Z.Korkuluⁿ, S.Koyama^{aj}, Y.Kubota^{aj}, J.Lee^q, M.Lettmann^e, R.Lozeva^{kr}, K.Matsui^{aj}, T.Miyazaki^{aj}, S.Nishimura^c, C.Louchart^e, L.Olivier^o, S.Otaⁱ, Z.Patel^g, E.Sahin^p, C.Santamaria^{dc}, C.Shand^g, P.-A.Söderström^c, G.L.Stefan^o, D.Steppenbeckⁱ, T.Sumikama^s, D.Suzuki^o, Zs.Vajtaⁿ, V.Werner^e, J.Wu^{ct}, Z.Xu^q, X.H.Zhou^a, Y.H.Zhang^a, H.S.Xu^a, F.S.Zhang^{uv}

Published 10 September 2018

Phys. Rev. C 98, 034310 (2018) <https://journals.aps.org/prc/abstract/10.1103/PhysRevC.98.034310>
First determination of β -delayed multiple neutron emission beyond $A=100$ through direct neutron measurement: The P_{2n} value of ¹³⁶Sb

R. Caballero-Folch^{1,*}, I. Dillmann^{1,2}, J. Agramunt³, J. L. Taín³, A. Algora^{3,4}, J. Äystö^{5,6}, F. Calviño⁷, L. Canete⁵, G. Cortès⁷, C. Domingo-Pardo³, T. Eronen⁵, E. Ganioglu⁸, W. Gelletly⁹, D. Gorelov⁵, V. Guadilla³, J. Hakala⁵, A. Jokinen⁵, A. Kankainen⁵, V. Kolhinen⁵, J. Koponen⁵, M. Marta², E. Mendoza¹⁰, A. Montaner-Pizá³, I. Moore⁵, C. R. Nobs¹¹, S. E. A. Orrigo³, H. Penttilä⁵, I. Pohjalainen⁵, J. Reinikainen⁵, A. Riego⁷, S. Rinta-Antila⁵, B. Rubio³, P. Salvador-Castiñeira⁷, V. Simutkin⁵, A. Tarifeño-Saldivia^{3,7}, A. Tolosa-Delgado³, and A. Voss⁵

Published 10 September 2018

NIM A 902, 228 (2018) <https://www.sciencedirect.com/science/article/pii/S0168900218304224>
The evolution of the STAR Trigger System

E.G.Judd^a, L.C.Bland^b, H.J.Crawford^a, J.Engelage^a, J.M.Landgraf^b, W.J.Llope^c, J.M.Nelson^d, M.Ng^a, A.Ogawa^b, C.Perkins^a, G.Visser^e, Z.Xu^b

Published 11 September 2018

2. News to Report

a. 27th International Nuclear Physics Conference (INPC)

Scottish Event Campus, Glasgow, UK.

29 July - 2 August 2019.

Organised by the IOP Nuclear Physics Group.

Held every three years, INPC is the biggest conference in the world for fundamental nuclear physics, and is overseen by the International Union of Pure and Applied Physics (IUPAP). The event in Glasgow follows conferences in Adelaide 2016, Florence 2013 and Vancouver 2010. You can find more information by visiting the website at inpc2019.iopconfs.org.

About this conference

The programme will showcase the very latest work across the whole range of topic areas in Nuclear Physics, from the study of hadrons to the heaviest nuclei, and the role of nuclear physics in our understanding of the universe. The importance of applications of nuclear science will also be highlighted.

Call for abstracts

Contributions for oral and/or poster presentations are invited. Abstracts of a maximum of one A4 page should be submitted [online](#) by 25 January 2019. Figures and references are permitted.

The organising committee is looking for papers covering the following:

- Nuclear Structure
- New Facilities and Instrumentation

- Societal Impact and Applications of Nuclear Science
- Nuclear Astrophysics
- Fundamental Symmetries and Interactions in Nuclei
- Neutrinos and Nuclei
- Nuclear Reactions
- QCD: Hadron Structure and Spectroscopy
- QCD: Partonic Phenomena
- Hot and Dense Nuclear Matter
- Outreach and Engagement

Key dates

Abstract submission deadline: 25 Jan 2019

Early registration deadline: 1 June 2019

Registration deadline: 19 July 2019

3. Outreach Activity

Calls open for the STFC Public Engagement Spark Awards and Nucleus Awards

These awards schemes aim to support high quality programmes of public engagement that inspire and involve audiences with stories of STFC science and technology that meet the aims of our [Public Engagement Strategy](#).

Calls for the STFC Public Engagement [Spark Awards 2018B](#) (grants up to £15K) and [Nucleus Awards](#) (grants between £15K and £100K) are now open for applications.

The deadline for the Spark Awards is 16:00 on 25th October.

The deadline for the Nucleus Awards is 16:00 on the 8th November.

Proposed engagement programmes must clearly focus around the remit of the STFC science programme (astronomy, solar and planetary science, particle physics, particle astrophysics, cosmology, nuclear physics and accelerator science) or clearly and demonstrably align to the science and technology work of STFC's national and international laboratories and facilities.

Before submitting your application you are encouraged to contact the [STFC Public Engagement Team](#) for advice.

4. Media Interactions

Guardian Article:

[Scientists hunt mysterious 'dark force' to explain hidden realm of the cosmos](#)

Scientists are about to launch an ambitious search for a “dark force” of nature which, if found, would open the door to a realm of the universe that lies hidden from view.

In this article Bryan McKinnon (Glasgow) talks about the search for dark protons.

Contribution by Bryan McKinnon

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