# UK Nuclear Activity

December 2021 Issue 102

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***1. Nuclear Physics Publications for December***

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. Rev. Lett. **127** 262501 (2021) (https://doi.org/10.1103/PhysRevLett.127.262501)
**First Measurement of Timelike Compton Scattering**
CLAS Collaboration
Published 22 December 2021

Phys. Rev. Lett. **127** 272301 (2021) (https://doi.org/10.1103/PhysRevLett.127.272301)
**$^{159}$Dy Electron-Capture: A New Candidate for Neutrino Mass Determination**
Z. Ge, T. Eronen, K. S. Tyrin, J. Kotila, J. Kostensalo, D. A. Nesterenko, O. Beliuskina, R. de Groote, A. de Roubin, S. Geldhof, W. Gins, M. Hukkanen, A. Jokinen A. Kankainen, Á. Koszorús, M. I. Krivoruchenko, S. Kujanpää, I. D. Moore, A. Raggio, S. Rinta-Antila, J. Suhonen, V. Virtanen, A. P. Weaver, and A. Zadvornaya
Published 29 December 2021

Phys. Rev. Lett. **127** 272302 (2021) (https://doi.org/10.1103/PhysRevLett.127.272303)
**Improved Λp Elastic Scattering Cross Sections between 0.9 and 2.0 GeV/c as a Main Ingredient of the Neutron Star Equation of State**
CLAS Collaboration
Published 30 December 2021

Phys. Rev. C **104** L061601 (2021) (https://doi.org/10.1103/PhysRevC.104.L061601)
**Search for periodic modulations of the rate of double-β decay of $^{100}$Mo in the NEMO-3 detector**
R. Arnold, C. Augier, A. S. Barabash, A. Basharina-Freshville, S. Blondel, S. Blot, M. Bongrand, D. Boursette, R. Breier, V. Brudanin, J. Busto, A. J. Caffrey, S. Calvez, C. Cerna, J. P. Cesar, M. Ceschia, A. Chapon, E. Chauveau, A. Chopra, L. Dawson, D. Duchesneau, D. Durand, G. Eurin, J. J. Evans, L. Fajt, D. Filosofov, R. Flack, P. Franchini, X. Garrido, C. Girard-Carillo, H. Gómez, B. Guillon, P. Guzowski, R. Hodák, A. Huber, P. Hubert, C. Hugon, M. H. Hussain, S. Jullian, A. Klimenko, O. Kochetov, S. I. Konovalov, V. Kovalenko, D. Lalanne, K. Lang, Y. Lemière, T. Le Noblet, Z. Liptak, X. R. Liu, P. Loaiza, G. Lutter, M. Macko, C. Macolino, F. Mamedov, C. Marquet, F. Mauger, A. Minotti, B. Morgan, J. Mott, I. Nemchenok, M. Nomachi, F. Nova, F. Nowacki, H. Ohsumi, G. Oliviéro,

R. B. Pahlka, V. Palusova, C. Patrick, F. Perrot, A. Pin, F. Piquemal, P. Povinec, P. Pridal, W. S. Quinn, Y. A. Ramachers, A. Remoto, J. L. Reyss, C. L. Riddle, E. Rukhadze, R. Saakyan, A. Salamatin, R. Salazar, X. Sarazin, J. Sedgbeer, Yu. Shitov, L. Simard, F. Šimkovic, A. Smetana, A. Smolnikov, S. Söldner-Rembold, B. Soulé, I. Štekl, J. Suhonen, C. S. Sutton, G. Szklarz, H. Tedjditi, J. Thomas, V. Timkin, S. Torre, Vl. I. Tretyak, V. I. Tretyak, V. I. Umatov, I. Vanushin, C. Vilela, V. Vorobel, D. Waters, and F. Xie
Published 8 December 2021

Phys. Rev. C **104** L061602 (2021) (https://doi.org/10.1103/PhysRevC.104.L061602)
**Examination of the sensitivity of quasifree reactions to details of the bound-state overlap functions**
C. A. Bertulani, A. Idini, and C. Barbieri
Published 14 December 2021

Phys. Rev. C **104** L061303 (2015) (https://doi.org/10.1103/PhysRevC.104.L061303)
**Isospin mixing and the cubic isobaric multiplet mass equation in the lowest T=2, A=32 quintet**
M. Kamil, S. Triambak, A. Magilligan, A. García, B. A. Brown, P. Adsley, V. Bildstein, C. Burbadge, A. Diaz Varela, T. Faestermann, P. E. Garrett, R. Hertenberger, N. Y. Kheswa, K. G. Leach, R. Lindsay, D. J. Marín-Lámbarri, F. Ghazi Moradi, N. J. Mukwevho, R. Neveling, J. C. Nzobadila Ondze, P. Papka, L. Pellegri, V. Pesudo, B. M. Rebeiro, M. Scheck, F. D. Smit, and H.-F. Wirth
Published 15 December 2021

Phys. Rev. C **104** 064305 (2021) (https://doi.org/10.1103/PhysRevC.104.064305)
**Identification of excited states in $^{107}$Te**
W. Zhang, B. Cederwall, C. Qi, A. Ertoprak, Ö. Aktas, X. Liu, K. Andgren, K. Auranen, T. Bäck, L. Barber, G. Beeton, D. M. Cullen, I. G. Darby, M. R. Dimmock, S. Eeckhaudt, E. Ganioğlu, M. Górska, T. Grahn, P. T. Greenlees, B. Hadinia, E. Ideguchi, A. Illana, P. M. Jones, D. T. Joss, R. Julin, S. Juutinen, J. M. Keatings, A. Khaplanov, F. Kulali, M. Leino, M. Luoma, B. Lv, B. S. Nara Singh, L. Nelson, M. Niikura, M. Nyman, J. Ojala, R. D. Page, J. Pakarinen, E. S. Paul, C. Petrache, M. Petri, P. Rahkila, P. Ruotsalainen, M. Sandzelius, J. Sarén, C. Scholey, J. F. Smith, J. Sorri, H. Tann, G. Zimba, J. Uusitalo, R. Wadsworth, and R. Wyss
Published 8 December 2021

Phys. Rev. C **104** 064309 (2021) (https://doi.org/10.1103/PhysRevC.104.064309)
**Structure of even-even Sr isotopes with 50<N<58 neutrons**
W. Urban, K. Sieja, T. Rzaca-Urban, J. Wisniewski, A. Blanc, M. Jentschel, P. Mutti, U. Köster, T. Soldner, G. de France, G. S. Simpson, C. A. Ur, A. G. Smith, and J. P. Greene
Published 13 December 2021

Phys. Rev. C **104** 064601 (2021) (https://doi.org/10.1103/PhysRevC.104.064601)
**Calculating the S-matrix of low-energy heavy-ion collisions using quantum coupled-channels wave-packet dynamics**
Terence Vockerodt and Alexis Diaz-Torres
Published 1 December 2021

Phys. Rev. C **104** 065501 (2021) (https://doi.org/10.1103/PhysRevC.104.065501)
**Projected sensitivity of the LUX-ZEPLIN experiment to the two-neutrino and neutrinoless double β decays of $^{134}$Xe**
The LUX-ZEPLIN Collaboration
Published 10 December 2021

Phys. Rev. C **104** 065803 (2021) (https://doi.org/10.1103/PhysRevC.104.065803)
**Mass measurements of $^{60-63}$Ga reduce x-ray burst model uncertainties and extend the evaluated T = 1 isobaric multiplet mass equation**
S. F. Paul, J. Bergmann, J. D. Cardona, K. A. Dietrich, E. Dunling Z. Hockenbery, C. Hornung, C. Izzo, A. Jacobs, A. Javaji, B. Kootte, Y. Lan, E. Leistenschneider, E. M. Lykiardopoulou, I. Mukul, T. Murböck, W. S. Porter, R. Silwal, M. B. Smith, J. Ringuette, T. Brunner, T. Dickel, I. Dillmann, G. Gwinner, M. MacCormick, M. P. Reiter, H. Schatz, N. A. Smirnova, J. Dilling, and A. A. Kwiatkowski
Published 13 December 2021

Phys. Lett. B **824** 136840 (2021) (https://doi.org/10.1016/j.physletb.2021.136840)
**Evidence against the wobbling nature of low-spin bands in $^{135}$Pr**
B. F. Lv, C. M. Petrache, E. A. Lawrie, S. Guo, A. Astier, K. K. Zheng, H .J. Ong, J. G. Wang, X. H. Zhou, Z. Y. Sun,

P. T. Greenlees, H. Badran, T. Calverley, D. M. Cox, T. Grahn, J. Hilton, R. Julin, S. Juutinen, J. Konki, J. Pakarinen, P. Papadakis, J.Partanen, P. Rahkila, P. Ruotsalainen, M. Sandzelius, J. Sarén, C. Scholey, J. Sorri, S. Stolze, J. Uusitalo, B. Cederwall, A. Ertoprak, H. Liu, I.Kuti, J. Timár, A. Tucholski, J. Srebrny, C. Andreoiu
Published 10 January 2022

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***2. News to Report***

**a. Dr. Carlo Bruno awarded ERC Starting Grant**

Dr Carlo Bruno has been awarded an ERC Starting Grant to study key nuclear reactions that control the lives and deaths of stars. Dr. Bruno, a Chancellor's Fellow at the University of Edinburgh (UK), is one of the 46 early career UK researchers to receive the award this year.

How do stars synthesise new elements? How are elements disseminated in our Galaxy? ELDAR will address burning questions on the origin of the Elements in the Lives and Deaths of stARs. ELDAR will develop new approaches for charged-particle detection at two world-leading European facilities, the CRYRING storage ring at FAIR (Germany) and the LUNA accelerator underground in INFN Gran Sasso (Italy), forging new links between leading European science communities and using different methods to study stellar scenarios that are intimately linked in Nature. In particular, the project will shed new light on the lifecycle of stars in globular clusters, and cataclysmic supernova explosions.

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***3. Outreach Activity***

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**4. Media Interactions**

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