UK Nuclear Activity

January 2014 Issue 7

In this issue,

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

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1. Nuclear Physics Publications for January

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.

Phys. Rev. C 89, 014301 (2014) http://prc.aps.org/abstract/PRC/v89/i1/e014301
Character of particle-hole excitations in ^{94}Ru deduced from γ -ray angular correlation and linear polarization measurements
F. Ghazi Moradi[1,*], C. Qi[1], B. Cederwall[1], A. Ataç[1,†], T. Bäck[1], R. Liotta[1], M. Doncel[1], A. Johnson[1], G. de France[2], E. Clément[2], A. Dijon[3], R. Wadsworth[4], T. W. Henry[4], A. J. Nichols[4], H. Al-Azri[4], J. Nyberg[5], A. Gengelbach[5], T. Hüyük[6], B. M. Nyakó[7], J. Timár[7], D. Sohler[7], Zs. Dombrádi[7], I. Kuti[7], K. Juhász[8,‡], M. Palacz[9], G. Jaworski[9,10], S. M. Lenzi[11], P. R. John[11], D. R. Napoli[12], A. Gottardo[12], V. Modamio[12], A. Di Nitto[13,§], B. Yilmaz[14], Ö. Aktas[15,16], and E. Ideguchi[17]
Published 3 January 2014

Phys. Rev. C 89, 014305 (2014) http://prc.aps.org/abstract/PRC/v89/i1/e014305
The C12(^{16}O,γ ^{28}Si) radiative capture reaction at sub-barrier energies
A. Goasduff[*], S. Courtin, F. Haas, D. Lebhertz, D. G. Jenkins, J. Fallis, C. Ruiz, D. A. Hutcheon, P.-A. Amandruz, C. Davis, U. Hager, D. Ottewell, and G. Ruprecht
Published 8 January 2014

Phys. Rev. Lett. 112, 022501 (2014) http://prl.aps.org/abstract/PRL/v112/i2/e022501
Measurement of the ^{1}H(γ, p)π^{0} Reaction Using a Novel Nucleon Spin Polarimeter
M. H. Sikora[1,*], D. P. Watts[1], D. I. Glazier[1], P. Aguar-Bartolomé[2], L. K. Akasoy[2], J. R. M. Annand[3], H. J. Arends[2], K. Bantawa[4], R. Beck[5], V. S. Bekrenev[6], H. Berghäuser[7], A. Braghieri[8], D. Branford[1], W. J. Briscoe[9], J. Brudvik[10], S. Cherepnya[11], R. F. B. Codling[3], B. T. Demissie[9], E. J. Downie[2,3,9], P. Drexler[7], L. V. Fil'kov[11], B. Freehart[9], R. Gregor[7], D. Hamilton[3], E. Heid[2,9], D. Hornidge[12], D. A. Howdle[3], I. Jaegle[13], O. Jahn[2], T. C. Jude[1], V. L. Kashevarov[11], I. Keshelashvili[13], R. Kondratiev[14], M. Korolija[15], M. Kotulla[7], A. A. Koulbardis[6], S. P. Kruglov[6], B. Krusche[13], V. Lisin[14], K. Livingston[3], I. J. D. MacGregor[3], Y. Maghrbi[13], D. M. Manley[4], Z. Marinides[9], M. Martinez[2], J. C. McGeorge[3], B. McKinnon[3], E. F. McNicoll[3], D. Mekterovic[15], V. Metag[7], S. Micanovic[15], D. G. Middleton[12], A. Mushkarenkov[8], B. M. K. Nefkens[10], A. Nikolaev[5], R. Novotny[7], M. Ostrick[2], P. B. Otte[2], B. Oussena[2,9], P. Pedroni[8], F. Pheron[13], A. Polonski[14], S. Prakhov[10], J. Robinson[3], G. Rosner[3], T. Rostomyan[8,†], S.

Schumann[2], D. I. Sober[16], A. Starostin[10], I. I. Strakovsky[9], I. M. Suarez[10], I. Supek[15], M. Thiel[7], A. Thomas[2], M. Unverzagt[2], D. Werthmüller[13], R. L. Workman[9], I. Zamboni[15], and F. Zehr[13] ((A2 Collaboration at MAMI))
Published 15 January 2014

Phys. Lett. B 728 (2014) 25-38 http://www.sciencedirect.com/science/article/pii/S0370269313009234
Multiplicity dependence of pion, kaon, proton and lambda production in p–Pb collisions at $\sqrt{s_{NN}}$ = 5.02 TeV
B. Abelev et al., ALICE Collaboration, UK Authors: D. Alexandre, L.S. Barnby, D. Evans, L.D. Hanratty, P.G. Jones, A. Jusko, M. Krivda, G.R. Lee, R.C. Lemmon, R. Lietava, A. Palaha, P. Petrov, R. Romita, P.A. Scott, O. Villalobos-Baillie
Published 20 January 2014

Phys. Lett. B 728 (2014) 216–227 http://www.sciencedirect.com/science/article/pii/S0370269313009544
Multi-strange baryon production at mid-rapidity in Pb–Pb collisions at $\sqrt{s_{NN}}$ = 2.76 TeV
B. Abelev et al., ALICE Collaboration, UK Authors: D. Alexandre, L.S. Barnby, D. Evans, L.D. Hanratty, P.G. Jones, A. Jusko, M. Krivda, G.R. Lee, R.C. Lemmon, R. Lietava, A. Palaha, P. Petrov, R. Romita, P.A. Scott, O. Villalobos-Baillie
Published 20 January 2014

NIM A 735, 304 (2014) http://www.sciencedirect.com/science/article/pii/S0168900213012709
GAMOS: A framework to do GEANT4 simulations in different physics fields with an user-friendly interface
Pedro Arce[a], Juan Ignacio Lagares[a], Laura Harkness[b], Daniel Pérez-Astudillo[a], Mario Cañadas[a], Pedro Rato[a], María de Prado[a], Yamiel Abreu[c], Gianluca de Lorenzo[d], Machiel Kolstein[d], Angelina Díaz[c]
Published 21 January 2014

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2. News to report

a. Physics with Large Arrays of Novel Scintillators. David Jenkins chaired the Workshop on Physics with Large Arrays of Novel Scintillators held in Dublin on 15th and 16th January 2014. This workshop supported by the IOP Nuclear Physics Group was highly interdisciplinary and looked at the use of next-generation scintillators such as lanthanum bromide as gamma-ray detectors. The workshop was attended by 65 delegates from nuclear experiment and theory, as well as space science, detector development and representatives from industry. Invited speakers included Dan Watts (Edinburgh) and Paul Stevenson (Surrey).

Contribution by David Jenkins david.jenkins@york.ac.uk (York) and Dan Watts dwatts1@ph.ed.ac.uk (Edinburgh)

b. Nucleosynthesis - Origins and Impacts: A Royal Astronomical Society Specialist Discussion Meeting. 14 February 2014, Burlington House, Piccadilly, London W1J 0BQ
Organised by Alex Murphy (Edinburgh) and Sean Ryan (Herts)
http://www.ras.org.uk/component/gem/?id=254.
A variety of processes occurring in a diverse range of astrophysical sites have resulted in the chemical abundances observed today. Research in this area is extremely diverse, including for example gamma-ray satellite observations of short-lived isotopes in stellar ejecta, anomalous isotopic abundances in pre-solar grains, and detailed nuclear reaction cross section measurements at astrophysically important energies. This meeting aims to bring these disparate research communities together, fostering a more coherent strategy for future research in this highly interdisciplinary area.
Tea and coffee will be available from 10:00 and again after the meeting at 15:30.
Speakers include Brad Gibson (Lancs), Christian Diget (York), Alex Murphy (Edinburgh), Marco Pignatari (Basel),

Steven Smartt (QUB), Monica Grady (Open University), Hilary Downes (Birkbeck) and Karin Lind (Cambridge)
Contribution by Alex Murphy
a.s.murphy@ed.ac.uk (Edinburgh)

c. India-UK Seminar on Physics Opportunities at ISOLDE. On 22-24 January 2014, a seminar was held in Chandigarh, India, under the financial support of The Royal Society of London (UK) and the Department of Science and Technology (India). A joint proposal, submitted by Dr David Jenkins (University of York) and Dr Bivash R. Behera (Panjab University), was successfully made to support a meeting on cross-fertilisation and international cooperation between India and the UK on topics related to the physics programme at CERN-ISOLDE.
Five physicists from across the UK went to India to represent a wide range of physics topics, namely: Peter Butler (Liverpool), Phil Woods (Edinburgh), Andrei N. Andreyev (York), David Jenkins (York), and Thomas E. Cocolios (Manchester). They were joined by close to 20 physicists from across India, representing different facilities: the Inter-University Accelerator Center (IUAC) in Delhi, the University of Delhi, the Bhabha Atomic Research Center (BARC) in Mumbai, the Tata Institute of Fundamental Research (TIFR) in Mumbai, and Panjab University in Chandigarh, amongst others.

This three-day seminar gave the opportunity to exchange about state-of-the-art research at ISOLDE and in India, as well as on-going development and projects. Dedicated, in-depth discussion panels were held on specific topics around HIE-ISOLDE, laser spectroscopy, and fission, with the aim of fostering the synergies between the research at ISOLDE and at the India accelerator facilities.
All parties showed great interest and enthusiasm. Clear work packages were identified, and ideas and collaborations should not be far in the future. A word of thanks is certainly due to the organisers of this seminar for their warm welcome and the fantastic food, and in particular to Dr David Jenkins & Dr Bivash R. Behera for giving all of us this opportunity and for a very smooth organisation.
Contribution by Thomas Elias Cocolios
thomas.elias.cocolios@cern.ch (Manchester)

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3. Outreach Activity

Hands on Physics at York. On the 17th and 18th of December 160 year 9 students came into the physics department at the University of York for a 'hands on physics' day. The day consisted of several talks and guided tours around the labs, including demonstrations of experiments. The students were given a thirty minute talk by Gemma Wilson, covering some background to nuclear physics (particularly looking at the size scale of nuclei by zooming in, in powers of ten), Rutherford scattering, and how we use different detectors and experiments to explore nuclear physics. Tom Henry and Jack Henderson also gave a talk in the labs, demonstrating alpha, beta and gamma radiation and shielding, they also talked about different detectors.
Contribution by Gemma Wilson
gemma.wilson@york.ac.uk (York)

Public Talk. Alison Laird gave a presentation to the Hull and East Riding Astronomy Society on 'Modern Alchemy – exploding stars in the lab'. It was attended by about 20 people.
Contribution by Alison Laird
alison.laird@york.ac.uk (York)

STFC Public Engagement Fellowships Call for Applications now open. Do you love sharing your research with the general public? Have you found a really cool way to communicate your science? Do you ever wish you had more time in your busy schedule to do public engagement?
STFC are pleased to announce that the 2014 Public Engagement Fellowship round is now open.
The scheme is open to all STFC funded researchers who are good communicators with research credibility to act as champions for STFC science and technology. The

Fellowships purchase a proportion of a researcher's time to enable you to concentrate more on public engagement activities. **The closing date for applications is Friday the 7th March at 4pm.**

Media and Communications Training
The Science and Technology Facilities Council offers free one-day Media Awareness and Communications Skills courses for researchers, as part of its Public Engagement programme.
The Media course develops skills in working with television, radio, newspapers and other media. The next course dates are 26 February and 4 June 2014 in London.
The *Communications* course includes how to write clearly without using jargon, structure a talk, use visual aids effectively, how to chair conferences, and how to run question and answer sessions. The next course dates are 5 February and 16 April 2014 in London.
Two-day residential Media and Communications training courses are also available and are held at the Kavli Royal Society International Centre in Buckinghamshire. The next dates are 10-11 March and 20-21 May 2014.
STFC offers bursaries to pay the course fees and T&S costs for eligible researchers. The courses are run for us by the Royal Society. To book a place visit the Royal Society website. Once you have a place, go to the STFC website to apply for an STFC bursary. The STFC contact for more information is Jane.Butt@stfc.ac.uk.

I'm a Scientist, Get Me Out of Here. The next round of the highly successful online outreach event *I'm a Scientist, Get Me Out of Here* is happening 10th-21st March and they're after research scientists and engineers to take part. It's a highly rewarding and enjoyable outreach event that involves inspiring and engaging school students, without having to leave your desk as it's all happening online.
It consists of you joining 4 other scientists in a "zone" on a website and taking questions from secondary school students via intense real time chats and thought provoking questions that come at a steadier pace.

If you want to know more about what it's like taking part feel free to ask me as I did it myself in 2010. Alternatively, you can check out what Kristin Harder who won the Particle Physics Zone, or Sarah Tesh who won the Extreme Clean Zone last year have to say.
There are two themed zones in March inspired by STFC-related science, both of which I think Nuclear Physicists would fit into if they're interested in taking part:
Nuclear: From helping to unravel the complexities of nuclear physics to using nucleons as part of your experimental toolkit: does the nucleus play a leading role in your research?
Extreme Size: From using the smallest particles of light or matter to peer into the molecular or even sub-atomic world, or studying the minute features of nanotechnology, to studying the largest structures or gargantuan events in our universe: are you looking at the extreme end of the spatial scale?
To sign up just fill in the form at imascientist.org.uk/scientist-apply by ***Friday 31st January***, or forward on to anyone who you think will be interested. There's lots more info at imascientist.org.uk/scientists/stfc or from project manager Rosie Schultz.
Contribution by Ceri Brenner ceri.brenner@stfc.ac.uk (STFC)

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4. Media Interactions

Black holes, Wormholes and Time Machines – at the Jaipur Literature Festival.
http://zeenews.india.com/entertainment/bookworm/jaipur-literature-festival-2014/british-physicist-jim-al-khalili-speaks-about-black-holes-wormholes-and-time-machines_3188.htm

Physics applications 'rise by 82% in a year'.
http://www.bbc.co.uk/news/uk-england-surrey-25894441

Contribution by Jim Al-Khalili j.al-khalili@surrey.ac.uk and Elizabeth Cunningham e.cunningham@surrey.ac.uk (Surrey)