UK Nuclear Activity

September 2015 Issue 27

In this issue,

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

Nuclear Physics Public Engagement Website: www.stfc.ac.uk/NuclearPhysicsForYou

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1. Nuclear Physics Publications for September*

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 92, 014325 (2015) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.92.014325
Internal decay of the (10^-) intruder state in ^{184}Tl
C. Van Beveren[1,*], A. N. Andreyev[2,3], A. E. Barzakh[4], T. E. Cocolios[5,6], D. Fedorov[4], V. N. Fedosseev[7], R. Ferrer[1], M. Huyse[1], U. Köster[8], J. Lane[9], V. Liberati[9], K. M. Lynch[5,6], B. A. Marsh[5], T. J. Procter[6], D. Radulov[1], E. Rapisarda[1,5], K. Sandhu[9], M. D. Seliverstov[2,4,5,10], P. Van Duppen[1], M. Venhart[11], and M. Veselsky[11]
Published 30 July 2015*

Phys. Rev. Lett. 115, 092002 (2015) http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.115.092002
Precision Measurement of the Longitudinal Double-Spin Asymmetry for Inclusive Jet Production in Polarized Proton Collisions at √s=200 GeV
L. Adamczyk *et al.* (STAR Collaboration)
Published 26 August 2015*

Int. J. Mod. Phys. E (2015) http://www.worldscientific.com/doi/10.1142/S0218301315410025
Collective rotation from ab initio theory
M. A. Caprio, P. Maris, J. P. Vary, R. Smith
Published 28 August 2015*

*Also including missed publications from previous months.

Phys. Lett. B, 748, 89 (2015) http://www.sciencedirect.com/science/article/pii/S0370269315004980
Excitation energy dependence of fragment-mass distributions from fission of ^{180,190}Hg formed in fusion reactions of ^{36}Ar +^{144,154}Sm
K. Nishio[a,,], A.N. Andreyev[a,b,c], R. Chapman[c], X. Derkx[d,e], Ch.E. Düllmann[d,f,e],L. Ghys[g,h], F.P. Heßberger[f,e], K. Hirose[a], H. Ikezoe[a], J. Khuyagbaatar[e,f], B. Kindler[f], B. Lommel[f], H. Makii[a], I. Nishinaka[a], T. Ohtsuki[i], S.D. Pain[c,j], R. Sagaidak[k], I. Tsekhanovich[l], M. Venhart[g], Y. Wakabayashi[a,m], S. Yan[n]
Published 2 September 2015

Phys. Rev. Lett. 115, 102503 (2015) http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.115.102503
Total Absorption Spectroscopy Study of ^{92}Rb Decay: A Major Contributor to Reactor Antineutrino Spectrum Shape
A.-A. Zakari-Issoufou[1], M. Fallot[1], A. Porta[1,*], A. Algora[2,3], J. L. Tain[2], E. Valencia[2], S. Rice[4], V. M Bui[1],S. Cormon[1], M. Estienne[1], J. Agramunt[2], J. Äystö[5], M. Bowry[4], J. A. Briz[1], R. Caballero-Folch[6], D. Cano-Ott[7], A. Cucoanes[1], V.-V. Elomaa[8], T. Eronen[8], E. Estévez[2], G. F. Farrelly[4], A. R. Garcia[7], W. Gelletly[2,4], M. B. Gomez-Hornillos[6], V. Gorlychev[6], J. Hakala[8], A. Jokinen[8], M. D. Jordan[2], A. Kankainen[8], P. Karvonen[8], V. S. Kolhinen[8], F. G. Kondev[9], T. Martinez[7], E. Mendoza[7], F. Molina[2,†], I. Moore[8], A. B. Perez-Cerdán[2], Zs. Podolyák[4], H. Penttilä[8], P. H. Regan[4,10], M. Reponen[8,‡], J. Rissanen[8], B. Rubio[2], T. Shiba[1], A. A. Sonzogni[11], C. Weber[8,§], and IGISOL collaboration[8]
Published 4 September 2015

Phys. Rev. C 92, 034306 (2015) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.92.034306
Reduced transition strengths of low-lying yrast states in chromium isotopes in the vicinity of N=40
Thomas Braunroth[1,*], A. Dewald[1], H. Iwasaki[2], S. M. Lenzi[3], M. Albers[4], V. M. Bader[2], T. Baugher[2], T. Baumann[5], D. Bazin[5], J. S. Berryman[5], C. Fransen[1], A. Gade[2], T. Ginter[5], A. Gottardo[6], M. Hackstein[1],J. Jolie[1], A. Lemasson[7], J. Litzinger[1], S. Lunardi[3], T. Marchi[8], V. Modamio[8], C. Morse[2], D. R. Napoli[8],A. Nichols[9], F. Recchia[3], S. R. Stroberg[2], R. Wadsworth[9], D. Weisshaar[5], K. Whitmore[2], and K. Wimmer[10]
Published 8 September 2015

Rev. C 92, 035808 (2015) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.92.035808
Structure of resonances in the Gamow burning window for the Al25(p,γ)Si26 reaction in novae
D. T. Doherty[1,2], P. J. Woods[1], D. Seweryniak[3], M. Albers[3,*], A. D. Ayangeakaa[3], M. P. Carpenter[3], C. J. Chiara[3,4,†], H. M. David[3], J. L. Harker[3,4], R. V. F. Janssens[3], A. Kankainen[1], C. Lederer[1], and S. Zhu[3]Phys. Published 17 September 2015

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2. News to Report

a. XXXIV Mazurian Lakes Conference on the Frontiers of Physics. From September 6 till 12, the University of Warsaw hosted its traditional Mazurian Lakes Conference in Piaski, on the shore of one of the Mazurian Lakes. This conference is famous for its great scientific content, and we were not disappointed this year, including contributions by Prof Peter Butler (Liverpool), Prof Wilton Catford (Surrey), Dr Thomas Cocolios (Manchester), Rob Frost (Manchester), and Magda Smolen (Paisley) to represent UK institutions. The Mazurian Lakes Conference, hosted every other year since 1968, is also famous for its regatta, in which Peter Butler distinguished himself as skipper of one of the boats, and for its camp fire and associated singing contest; the UK was awarded the price for 'most number of songs performed' by an expert panel of conference veterans.

Skipper Peter Butler and his crew (from left to right: Paul Greenlees, Kamila Sieja, Peter Butler, Kasia Wrzosek-Lipska).

Conference group shot by the beach.
Picture credit: Magda Zielinska

Contribution by Thomas Elias Cocolios thomas.elias.cocolios@cern.ch (Manchester).

b. Flying towards new horizons. From 1 October, I shall begin as a Lecturer within IKS - KU Leuven, where I am set to start a research group on new opportunities with radioactive ion beams. It is with a mixture of sadness and excitement that I leave Manchester after completing only 3 years of my STFC Ernest Rutherford Fellowship. Sadness because the Nuclear Group in Manchester, and all of the UK Nuclear Community, have been an amazing environment to work, and excitement because of all the promises that this Lectureship brings. I intend on maintaining strong relationships with the UK Nuclear Community in my position, especially with Manchester and NPL concerning the MEDICIS project at CERN, my first big research topic in Leuven. I am also already thinking about what other 'new opportunities' can be seized and I look forward to working on them with many of you.
Contribution by Thomas Elias Cocolios *thomas.elias.cocolios@cern.ch (Manchester).*

c. Physicist shortlisted for Women of the Future Award. Dr Laura Harkness-Brennan from the University of Liverpool is one of five candidates to be short-listed in the Science category of the Women of the Future Awards.
The Women of the Future Awards, founded by Pinky Lilani in 2006, recognizes and celebrates the inspirational female talent in Britain today across a number of sectors including Media, Business and Arts and Culture.
Dr Harkness-Brennan is a nuclear physics lecturer at Liverpool whose research focuses on the development of novel gamma-ray detection and imaging techniques for fundamental experimental nuclear physics research and in the healthcare and security fields. She undertakes a range of public engagement activities and has delivered many talks at schools and public events.
She has previously been awarded the Very Early Career Woman Physicist of the Year by the Institute of Physics.
Professor Ronan McGrath, Head of the School of Physical Sciences, said: "Laura is an exceptional young woman. She contributes across the whole spectrum of academic activity, being an enthusiastic educator, open day recruiter, researcher and advocate for public engagement with physics.
"What really stands out for me is that way in which she embeds externally-funded impact activities seamlessly into her overall programme. Being short-listed for such a high-profile and prestigious award is deserved recognition for her."
The winners will be announced at an awards dinner in London on October 27, 2015.
Contribution by Rodi Herzberg *R.Herzberg@liverpool.ac.uk (Liverpool)*

d. The Quest for the Inaccessible Pole. In February next year I will be part of an expedition aiming to be the first to reach the Northern Pole of Inaccessibility – the furthest you can get from land on the Arctic Ocean. Despite being a goal of noted explorers such as Shackleton, to this day no one has reached it which makes it the last major world first of polar exploration.
I am just finishing my Ph.D in the Nuclear Physics Group at the University of Birmingham, and I signed up because I wanted something a little different to do next. I was attracted to the expedition not only because of the adventure but also by the scientific goals: we will be taking data for climate scientists to improve understanding of the sea ice dynamics by measuring sea ice and snow thicknesses, as well as water salinity. These ground measurements provide calibrations for satellite-based instruments and are used as inputs to sea ice models.
The expedition is run by an organisation called Ice Warrior, who specialise in training members of the public to be safe, competent polar explorers, and have been doing so since 2001. The founder, Jim McNeill, has 30 years' experience in Arctic exploration and has worked as a safety consultant on, amongst others, BBC Frozen Planet and Marvel's Captain America.
The route to the Inaccessible Pole involves skiing 800 miles across the ice and is expected to take about 80 days, starting in February and ending in May. Novices such as myself will support Jim for 20 day legs, dragging all of our food and equipment in sleds. Hazards include complete darkness, falling through the ice, and encounters with polar bears – not to mention the extreme (-40C) cold! In order to deal with these safely, we will spend ten days training in the UK next month and a further two weeks in Svalbard in January, in addition to being as physically fit as possible.
I also couldn't pass up such a good opportunity to raise money for charity, so I am supporting United World Schools whose

aim is to provide education to children in the most remote communities who have no access to it and therefore very little hope for social mobility. As a full time student for my whole life so far, it doesn't escape me how lucky I am to have had such an opportunity. My campaign is called *Reaching the Unreachable* in reference to the unreached pole and the unreached students. My goal is to raise £20,000.

After the expedition I plan to recover at my new postdoc position in sunny Canberra!
For more information (and to donate!), go to my expedition website:
reachingtheunreachable.wordpress.com
Contribution by Joe Walshe
j.walshe@pgr.bham.ac.uk (Birmingham)

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3. Outreach Activity

I'm a Scientist - STFC funded zones Nov 2015
I'm a Scientist is an online outreach event that gets scientists talking to schools students all over the country at imascientist.org.uk, and applications are now open for the next event in November!
For two weeks, 9th – 20th November, STFC scientists will answer students' questions, and engage directly with them in live text-based chats. The students will then vote for their favourite scientist to win £500 to use for more public outreach. The STFC is funding two zones for scientists to be part of: Extreme Pressure Zone, and a general science zone, which is suitable for any STFC scientist.
By taking part you get to develop communication skills, gain a fresh perspective on your work, and find out what young people really think about science, while showing students that scientists are real people.
As everything happens online, you can do all this from your laptop at work, your phone on the train, or possibly even your internet-connected fridge.
Apply to take part by Sunday 27th September here:
imascientist.org.uk/scientists
For more insight into what's involved read what STFC winners Chris and James, and others from June, thought about the event here: "The most fun I've had in my lab coat"
If you'd like to find out more or have any questions, please contact antony@gallomanor.com or call on 01225 326892.

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4. Media Interactions

Buzzfeed article: Dr Liam Gaffney and 11 other scientists were asked: 'What is the one fact humanity needs to know? If civilisation was destroyed, what scientific information would you pass on to the survivors?' See what his answer was:
I Asked 12 Scientists: What Is The One Fact Humanity Needs To Know?
Contribution by Liam Gaffney
Liam.Gaffney@uws.ac.uk (University of the West of Scotland)