UK Nuclear Activity

May 2014 Issue 11

In this issue,

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

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

---

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.

Phys. Rev. C 89, 045804 (2014) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.89.045804
Level structure of ^{31}S: From low excitation energies to the region of interest for hydrogen burning in novae through the ^{30}P(p,γ)^{31}S reaction
D. T. Doherty[1,*], P. J. Woods[1], G. Lotay[1,†], D. Seweryniak[2], M. P. Carpenter[2], C. J. Chiara[2,3], H. M. David[1,‡], R. V. F. Janssens[2], L. Trache[4,§], and S. Zhu[2]
*Published 23 April 2014

Phys. Rev. C 89, 041303(R) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.89.041303
Shell and shape evolution at *N*=28: The Mg40 ground state
H. L. Crawford[1,*], P. Fallon[1], A. O. Macchiavelli[1], R. M. Clark[1], B. A. Brown[2], J. A. Tostevin[2,3], D. Bazin[2], N. Aoi[4], P. Doornenbal[4], M. Matsushita[4], H. Scheit[4], D. Steppenbeck[4], S. Takeuchi[4], H. Baba[4], C. M. Campbell[1], M. Cromaz[1], E. Ideguchi[5], N. Kobayashi[6], Y. Kondo[6], G. Lee[6], I. Y. Lee[1], J. Lee[4], K. Li[4], S. Michimasa[5], T. Motobayashi[4], T. Nakamura[6], S. Ota[5], S. Paschalis[1], M. Petri[1,†], T. Sako[5], H. Sakurai[4], S. Shimoura[5], M. Takechi[4], Y. Togano[4], H. Wang[4], and K. Yoneda[4]
*Published 30 April 2014

Phys. Lett. B 732 (2014) 161–166 http://www.sciencedirect.com/science/article/pii/S0370269314001907
Experimental investigation of the 0_2^+ band in ^{154}Sm as a *β*-vibrational band
J. Smallcombe[a,], P.J. Davies[a], C.J. Barton[a], D.G. Jenkins[a], L.L. Andersson[b], P.A. Butler[b], D.M. Cox[b], R.-D. Herzberg[b], A. Mistry[b], E. Parr[b], T. Grahn[c], P.T. Greenlees[c], K. Hauschild[c,d], A. Herzan[c], U. Jakobsson[c], P. Jones[c], R. Julin[c], S. Juutinen[c], S. Ketelhut[c], M. Leino[c], A. Lopez-Martens[c,d], P. Nieminen[c], J. Pakarinen[c], P. Papadakis[c,b], P. Peura[c], P. Rahkila[c], S. Rinta-Antila[c], P. Ruotsalainen[c], M. Sandzelius[c], J. Sarén[c], C. Scholey[c], J. Sorri[c], J. Uusitalo[c]
Published 1 May 2014

*Also including missed publications from April.

Phys. Lett. B 732 (2014) 210–213 http://www.sciencedirect.com/science/article/pii/S0370269314002056
Precision measurement of the electromagnetic dipole strengths in ^{11}Be
E. Kwan[a], C.Y. Wu[a], N.C. Summers[a], G. Hackman[b], T.E. Drake[c], C. Andreoiu[d], R. Ashley[d], G.C. Ball[b], P.C. Bender[b], A.J. Boston[e], H.C. Boston[e], A. Chester[d], A. Close[b], D. Cline[f], D.S. Cross[d], R. Dunlop[g], A. Finlay[g], A.B. Garnsworthy[b], A.B. Hayes[f], A.T. Laffoley[g], T. Nano[h], P. Navrátil[b], C.J. Pearson[b], J. Pore[d], S. Quaglioni[a], C.E. Svensson[g], K. Starosta[d], I.J. Thompson[a], P. Voss[d], S.J. Williams[b,1], Z.M. Wang[d,b]
Published 1 May 2014

Phys. Rev. Lett. 112, 172501 http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.112.172501
^{48}Ca+^{249}Bk Fusion Reaction Leading to Element Z=117: Long-Lived α-Decaying ^{270}Db and Discovery of ^{266}Lr
J. Khuyagbaatar[1,2,*], A. Yakushev[2], Ch. E. Düllmann[1,2,3], D. Ackermann[2], L.-L. Andersson[1], M. Asai[4], M. Block[2], R. A. Boll[5], H. Brand[2], D. M. Cox[6], M. Dasgupta[7], X. Derkx[1,3], A. Di Nitto[3], K. Eberhardt[1,3], J. Even[1], M. Evers[7], C. Fahlander[8], U. Forsberg[8], J. M. Gates[9], N. Gharibyan[10], P. Golubev[8], K. E. Gregorich[9], J. H. Hamilton[11], W. Hartmann[2], R.-D. Herzberg[6], F. P. Heßberger[1,2], D. J. Hinde[7], J. Hoffmann[2], R. Hollinger[2], A. Hübner[2], E. Jäger[2], B. Kindler[2], J. V. Kratz[3], J. Krier[2], N. Kurz[2], M. Laatiaoui[1], S. Lahiri[12], R. Lang[2], B. Lommel[2], M. Maiti[12,†], K. Miernik[5], S. Minami[2], A. Mistry[6], C. Mokry[1,3], H. Nitsche[9], J. P. Omtvedt[13], G. K. Pang[9], P. Papadakis[6,14], D. Renisch[3], J. Roberto[5], D. Rudolph[8], J. Runke[2], K. P. Rykaczewski[5], L. G. Sarmiento[8], M. Schädel[2,4], B. Schausten[2], A. Semchenkov[13], D. A. Shaughnessy[10], P. Steinegger[15,16], J. Steiner[2], E. E. Tereshatov[10], P. Thörle-Pospiech[1,3], K. Tinschert[2], T. Torres De Heidenreich[2], N. Trautmann[3], A. Türler[15,16], J. Uusitalo[14], D. E. Ward[8], M. Wegrzecki[17], N. Wiehl[1,3], S. M. Van Cleve[5], and V. Yakusheva[1]
Published 1 May 2014

Phys. Rev. C 89, 054312 (2014) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.89.054312
Decay of $^{201–203}$Ra and $^{200–202}$Fr
Z. Kalaninová[1,*], S. Antalic[1], A. N. Andreyev[2,3], F. P. Heßberger[4,5], D. Ackermann[4], B. Andel[1], L. Bianco[6], S. Hofmann[4], M. Huyse[7], B. Kindler[4], B. Lommel[4], R. Mann[4], R. D. Page[6], P. J. Sapple[6], J. Thomson[6], P. Van Duppen[7], and M. Venhart[1,8]
Published 12 May 2014

Nature Physics 10 (2014) 338 http://www.nature.com/nphys/journal/v10/n5/full/nphys2962.html
News and Views article: Track it to the limit
Philip Walker[1,]
Published May 2014

---

2. News to Report

a. 4th International Symposium on the Nuclear Symmetry Energy. The Fourth International Symposium on the Nuclear Symmetry Energy (NuSYM14) will be held on July 7-9, 2014 at the University of Liverpool. The symposium will cover similar topics to those discussed in past editions, with a particular emphasis on the links with astrophysics:
- Advances in the nuclear equation of state
- Recent theoretical developments related to isospin asymmetric nuclear matter
- New experimental constraints on the symmetry energy from nuclear reactions and nuclear structure experiments
- Symmetry energy and neutron stars from X-ray, radio and gravitational wave observatories

The programme will comprise of invited and contributed talks as well as posters and the participation of young researchers is strongly encouraged. Abstracts should be submitted by email by **May 30th** to sue.richards@stfc.ac.uk. Practical information, including registration, accommodation, travel, etc, can be found on the Symposium website at http://npg.dl.ac.uk/NuSYM2014-Workshop/. Accommodation has been reserved at Vine Court on campus and can be booked through the on-line shop on the Symposium website by **June 9th**.
A registration fee of 50 GBP (free for PhD students) should be paid through a separate on-line shop on the Symposium website, also by **June 9th**.

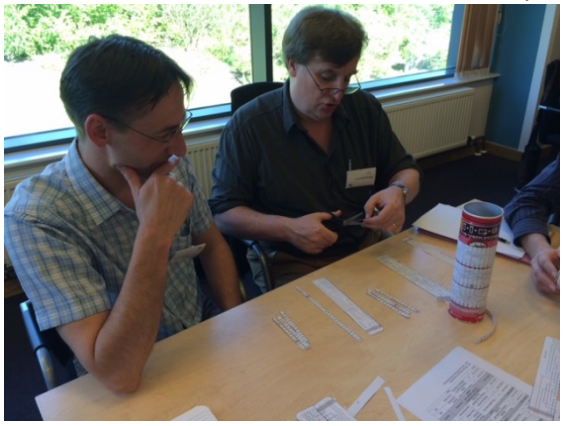
b. NewCompStar - Exploring fundamental physics with compact stars. NewCompStar is a European research action, funded under the COST program. Its aims are to provide an understanding of dense matter, as found in nuclei and neutron stars. Note that these are deliberately broad, as one of the targets of the action is to facilitate the communication

between astronomical observers and nuclear physicists.
The UK nuclear community, particularly within nuclear astrophysics, can benefit from the action in a number of ways. For instance, anyone in a UK research institution can apply for Short Term Scientific Missions (STSM), which would fund exchange visits for researchers (particularly in early stages of their careers) to nurture new collaborations. STSMs cover travel and subsistence expenses for up to 90 days in an institution or laboratory in another European country - but also partner countries such as Argentina, New Zealand, or South Africa. The deadline for the next round of STSMs is June 30th.
More information can be obtained at the action's website: http://compstar.uni-frankfurt.de/ or by contacting the UK's management committee representatives, Arnau Rios (a.rios@surrey.ac.uk) or Ian Jones (D.I.Jones@soton.ac.uk).
Contribution by Arnau Rios a.rios@surrey.ac.uk (Surrey)

---

3. Outreach Activity

Teacher's Conference. On Friday/Saturday the 16th-17th May, ten PhD students from University of York presented their SIESTA talks at the SIESTA-FIESTA Teacher's Conference at the National Science Learning Centre. The sessions were a mixture of seminars and hands-on workshops, covering a wide range of contemporary research topics, concepts and applications, which were both insightful and enjoyable for the participants. The event kicked off Friday evening with two pub-talks on how radiation interacts with matter (which included details on different types of radiation and demonstrated a CZT based detector) and Nuclear Power, and continued on Saturday with presentations and demonstrations of the Nature of Science, the Enigma machine, the Monte Carlo method, Quantum Entanglement, Astrophotography, Iridium and its use in computer hard drives, Fusion Space Drives, Solar Flares, and the Diamond facility.



The conference was well attended with 22 physics teachers, who were very impressed with the quality of the talks and found the demonstrations to be extremely useful for their teaching. The event was organised by Christian Diget and special thanks go to the presenters, David Thomas, Jarrod Leddy, Nick Walkden, Andrew West, Chris Kelley, Raquel de Almeida Rocha Ponzoni, Oliver Whear, David Blackman, Tom Henry, and Sophia Henneberg, who all did a great job at communicating physics research and concepts to the teachers.

Based on this yea r's experience, the event will become an annual event organised jointly between the Department of Physics, University of York, and the National Science Learning Centre.
Contribution by Christian Aaen Diget christian.diget@york.ac.uk (York) with modifications from Katherine Leech katherine.leech@york.ac.uk (York) and Thomas Henry twh509@york.ac.uk (York)

Public Talk. On 13th May, Phil Walker gave a talk entitled: "What is the Universe made of?", to Farnham Astronomical Society, Surrey.
Contribution by Phil Walker p.walker@surrey.ac.uk (Surrey)

4. Media Interactions

New element set to join the periodic table: Scientists confirm that the super-heavy element 117 DOES exist.

Read more: Daily Mail, Independent, New Scientist, Scientific America, Physics World