UK Nuclear Activity

April 2014 Issue 10

In this issue,

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

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1. Nuclear Physics Publications for April*

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.

EPJ Web of Conferences 66, 02042 (2014) http://dx.doi.org/10.1051/epjconf/20146602042
Cause of the charge radius isotope shift at the *N*=126 shell gap
P.M. Goddard, P.D. Stevenson and A. Rios
*Published 20 March 2014

EPJ Web of Conferences 66, 02099 (2014) http://dx.doi.org/10.1051/epjconf/20146602099
Isoscalar and Isovector Giant Monopole Resonances from a Continuum Hartree-Fock Method
P. D. Stevenson[a] and C. I. Pardi
*Published 20 March 2014

Phys. Rev. C 89, 034320 (2014) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.89.034320
Structure of ^{13}Be probed via secondary-beam reactions
G. Randisi[1,*], A. Leprince[1], H. Al Falou[1,†], N. A. Orr[1], F. M. Marqués[1], N. L. Achouri[1], J.-C. Angélique[1], N. Ashwood[2], B. Bastin[1,‡], T. Bloxham[2], B. A. Brown[3], W. N. Catford[4], N. Curtis[2], F. Delaunay[1], M. Freer[2], E. de Góes Brennand[5], P. Haigh[2], F. Hanappe[5], C. Harlin[4], B. Laurent[1,§], J.-L. Lecouey[1], A. Ninane[6], N. Patterson[4], D. Price[2], L. Stuttgé[7], and J. S. Thomas[4,‖]
*Published 26 March 2014

Phys. Rev. X 4, 011055 (2014) http://journals.aps.org/prx/abstract/10.1103/PhysRevX.4.011055
Decay-Assisted Laser Spectroscopy of Neutron-Deficient Francium
K. M. Lynch[1,2,3,*], J. Billowes[1], M. L. Bissell[3], I. Budinčević[3], T. E. Cocolios[1,2], R. P. De Groote[3], S. De Schepper[3], V. N. Fedosseev[4], K. T. Flanagan[1], S. Franchoo[5], R. F. Garcia Ruiz[3], H. Heylen[3], B. A. Marsh[4], G. Neyens[3], T. J. Procter[1,†], R. E. Rossel[4,6], S. Rothe[4,6], I. Strashnov[1], H. H. Stroke[7], and K. D. A. Wendt[6]
*Published 28 March 2014

*Also including missed publications from March.

Phys. Rev. C 89, 034323 (2014) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.89.034323
Electromagnetic moments of odd-A $^{193–203,211}$Po isotopes
M. D. Seliverstov[1,2,3,4,*], T. E. Cocolios[1,5,6], W. Dexters[1], A. N. Andreyev[4,7], S. Antalic[8], A. E. Barzakh[2], B. Bastin[1], J. Büscher[1], I. G. Darby[1], D. V. Fedorov[2], V. N. Fedosseev[5], K. T. Flanagan[9,10], S. Franchoo[11], G. Huber[3], M. Huyse[1], M. Keupers[1], U. Köster[12], Yu. Kudryavtsev[1], B. A. Marsh[5], P. L. Molkanov[2], R. D. Page[13], A. M. Sjödin[5,14], I. Stefan[11], P. Van Duppen[1,5], M. Venhart[1,15], and S. G. Zemlyanoy[16]
*Published 31 March 2014

Phys. Rev. E 89, 033312 (2014) http://journals.aps.org/pre/abstract/10.1103/PhysRevE.89.033312
Extension of the continuum time-dependent Hartree-Fock method to proton states
C. I. Pardi[*], P. D. Stevenson[†] and K. Xu[‡]
*Published 31 March 2014

Phys. Rev. Lett. 112, 132501 (2014) http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.112.132501
1$p_{3/2}$ Proton-Hole State in ^{132}Sn and the Shell Structure Along *N*=82
J. Taprogge[1,2,3], A. Jungclaus[1,*], H. Grawe[4], S. Nishimura[3], P. Doornenbal[3], G. Lorusso[3], G. S. Simpson[5], P.-A. Söderström[3], T. Sumikama[6], Z. Y. Xu[7], H. Baba[3], F. Browne[3,8], N. Fukuda[3], R. Gernhäuser[9], G. Gey[3,5,10], N. Inabe[3], T. Isobe[3], H. S. Jung[11,†], D. Kameda[3], G. D. Kim[12], Y.-K. Kim[12,13], I. Kojouharov[4], T. Kubo[3], N. Kurz[4], Y. K. Kwon[12], Z. Li[14], H. Sakurai[3,7], H. Schaffner[4], K. Steiger[9], H. Suzuki[3], H. Takeda[3], Zs. Vajta[3,15], H. Watanabe[3], J. Wu[3,14], A. Yagi[16], K. Yoshinaga[17], G. Benzoni[18], S. Bönig[19], K. Y. Chae[20], L. Coraggio[21], A. Covello[21,22], J.-M. Daugas[23], F. Drouet[5], A. Gadea[24], A. Gargano[21], S. Ilieva[19], F. G. Kondev[25], T. Kröll[19], G. J. Lane[26], A. Montaner-Pizá[24], K. Moschner[27], D. Mücher[9], F. Naqvi[28], M. Niikura[7], H. Nishibata[16], A. Odahara[16], R. Orlandi[29,30], Z. Patel[31], Zs. Podolyák[31], and A. Wendt[27]
Published 1 April 2014

Phys. Lett. B 731 (2014) 358–361 http://www.sciencedirect.com/science/article/pii/S0370269314001580
Study of the ^{44}Ti(α,p)^{47}V reaction and implications for core collapse supernovae
V. Margerin[a], A.St.J. Murphy[a], T. Davinson[a], R. Dressler[b], J. Fallis[c], A. Kankainen[d, e, 1], A.M. Laird[f], G. Lotay[a, 2], D.J. Mountford[a], C.D. Murphy[a], C. Seiffert[g], D. Schumann[b], T. Stowasser[b], T. Stora[g], C.H.-T. Wang[h], P.J. Woods[a]
Published 4 April 2014

Phys. Rev. Lett. 112, 132502 (2014) http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.112.132502
First Observation of the Unbound Nucleus ^{15}Ne
F. Wamers[1,2,3,4], J. Marganiec[1,2,3], F. Aksouh[2], Yu. Aksyutina[2], H. Álvarez-Pol[5], T. Aumann[1,2], S. Beceiro-Novo[5], K. Boretzky[2], M. J. G. Borge[6], M. Chartier[7], A. Chatillon[2], L. V. Chulkov[2,8], D. Cortina-Gil[5], H. Emling[2], O. Ershova[2,9], L. M. Fraile[10], H. O. U. Fynbo[11], D. Galaviz[6], H. Geissel[2], M. Heil[2], D. H. H. Hoffmann[1], H. T. Johansson[12], B. Jonson[12], C. Karagiannis[2], O. A. Kiselev[2], J. V. Kratz[13], R. Kulessa[14], N. Kurz[2], C. Langer[2,9], M. Lantz[12,15], T. Le Bleis[2,16], R. Lemmon[17], Yu. A. Litvinov[2], K. Mahata[2,18], C. Müntz[9], T. Nilsson[12], C. Nociforo[2], G. Nyman[12], W. Ott[2], V. Panin[1,2], S. Paschalis[2,7], A. Perea[6], R. Plag[2,9], R. Reifarth[2,9], A. Richter[1], C. Rodriguez-Tajes[5], D. Rossi[2,13,*], K. Riisager[11], D. Savran[3,4], G. Schrieder[1], H. Simon[2], J. Stroth[9], K. Sümmerer[2], O. Tengblad[6], H. Weick[2], C. Wimmer[2,9], and M. V. Zhukov[12]
Published 4 April 2014

J. Radiol. Prot. 34 347 (2014) http://iopscience.iop.org/0952-4746/34/2/347/
Evidence for age-related performance degradation of ^{241}Am foil sources commonly used in UK schools
R Whitcher[1], R D Page[2] and P R Cole[3]
Published 4 April 2014

Phys. Rev. C 89, 044303 (2014) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.89.044303
Density and isospin-asymmetry dependence of high-momentum components
A. Rios[1,*], A. Polls[2], and W. H. Dickhoff[3]
Published 4 April 2014

Phys. Rev. C 89, 044304 (2014) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.89.044304
Favored configurations for four-quasiparticle K isomerism in the heaviest nuclei
H. L. Liu[1,*], P. M. Walker[2], and F. R. Xu[3]
Published 4 April 2014

Phys. Rev. C 89, 044309 (2014) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.89.044309
Magnetic properties of ^{177}Hf and ^{180}Hf in the strong-coupling deformed model
S. Muto[1,*], N. J. Stone[2,3], C. R. Bingham[2,4], J. R. Stone[2,3], P. M. Walker[5], G. Audi[6], C. Gaulard[6], U. Köster[7], J. Nikolov[8], K. Nishimura[9], T. Ohtsubo[10], Z. Podolyak[5], L. Risegari[6], G. S. Simpson[11], M. Veskovic[8], and W. B. Walters[12]
Published 7 April 2014

Phys. Rev. Lett. 112, 142501 (2014) http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.112.142501
Deformation-Driven *p*-Wave Halos at the Drip Line: ^{31}Ne
T. Nakamura[1], N. Kobayashi[1], Y. Kondo[1], Y. Satou[1,2], J. A. Tostevin[3], Y. Utsuno[4], N. Aoi[5], H. Baba[5], N. Fukuda[5], J. Gibelin[6], N. Inabe[5], M. Ishihara[5], D. Kameda[5], T. Kubo[5], T. Motobayashi[5], T. Ohnishi[5], N. A. Orr[6], H. Otsu[5], T. Otsuka[7], H. Sakurai[5], T. Sumikama[8], H. Takeda[5], E. Takeshita[5], M. Takechi[5], S. Takeuchi[5], Y. Togano[1,5], and K. Yoneda[5]
Published 7 April 2014

Phys. Rev. C 89, 044310 (2014) http://journals.aps.org/prc/abstract/10.1103/PhysRevC.89.044310
Spectroscopy of the neutron-deficient *N*=50 nucleus Rh95
F. Ghazi Moradi[1,*], B. Cederwall[1], C. Qi[1], T. Bäck[1], A. Ataç[1,†], R. Liotta[1], M. Doncel[1], A. Johnson[1], G. de France[2], E. Clément[2], J. Nyberg[3], A. Gengelbach[3], B. M. Nyakó[4], J. Gál[4], G. Kalinka[4], J. Molnár[4], J. Timár[4], D. Sohler[4], Zs. Dombrádi[4], I. Kuti[4], K. Juhász[5,‡], D. R. Napoli[6], A. Gottardo[6], V. Modamio[6], R. Wadsworth[7], T. W. Henry[7], A. J. Nichols[7], H. Al-Azri[7], M. Palacz[8], E. Ideguchi[9], Ö. Aktas[10,11], A. Di Nitto[12,§], A. Dijon[2], T. Hüyük[13], G. Jaworski[8,14], P. R. John[15], and B. Yilmaz[16]
Published 9 April 2014

Phys. Rev. Lett. 112, 142502 (2014) http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.112.142502
Evolution of Collectivity in ^{72}Kr: Evidence for Rapid Shape Transition
H. Iwasaki[1,2], A. Lemasson[1], C. Morse[1,2], A. Dewald[3], T. Braunroth[3], V. M. Bader[1,2], T. Baugher[1,2], D. Bazin[1], J. S. Berryman[1], C. M. Campbell[4], A. Gade[1,2], C. Langer[1,5], I. Y. Lee[4], C. Loelius[1,2], E. Lunderberg[1,2], F. Recchia[1], D. Smalley[1], S. R. Stroberg[1,2], R. Wadsworth[6], C. Walz[1,7], D. Weisshaar[1], A. Westerberg[8], K. Whitmore[1,2], and K. Wimmer[1,8]
Published 10 April 2014

Phys. Rev. Lett. 112, 162701 http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.112.162701
Shape Coexistence in the Neutron-Deficient Even-Even $^{182-188}$Hg Isotopes Studied via Coulomb Excitation
N. Bree[1], K. Wrzosek-Lipska[1,2,*], A. Petts[3], A. Andreyev[1,4], B. Bastin[1,5], M. Bender[6,7], A. Blazhev[8], B. Bruyneel[8], P. A. Butler[3], J. Butterworth[4], M. P. Carpenter[9], J. Cederkäll[10,11], E. Clément[5,11], T. E. Cocolios[1,11,12], A. Deacon[12], J. Diriken[1,13], A. Ekström[10], C. Fitzpatrick[12], L. M. Fraile[11,14], Ch. Fransen[8], S. J. Freeman[12], L. P. Gaffney[1,3], J. E. García-Ramos[15], K. Geibel[8], R. Gernhäuser[16], T. Grahn[17,18], M. Guttormsen[19], B. Hadinia[20,21], K. Hadyńska-Kle¸k[2], M. Hass[22], P.-H. Heenen[23], R.-D. Herzberg[3], H. Hess[8], K. Heyde[24], M. Huyse[1], O. Ivanov[1], D. G. Jenkins[4], R. Julin[17], N. Kesteloot[1,13], Th. Kröll[25], R. Krücken[16], A. C. Larsen[19], R. Lutter[26], P. Marley[4], P. J. Napiorkowski[2], R. Orlandi[1,20], R. D. Page[3], J. Pakarinen[17,18], N. Patronis[1,27], P. J. Peura[17], E. Piselli[11], P. Rahkila[17], E. Rapisarda[11], P. Reiter[8], A. P. Robinson[4,12], M. Scheck[3,20,28], S. Siem[19], K. Singh Chakkal[22], J. F. Smith[20], J. Srebrny[2], I. Stefanescu[1,16], G. M. Tveten[19], P. Van Duppen[1], J. Van de Walle[11], D. Voulot[11], N. Warr[8], F. Wenander[11], A. Wiens[8], J. L. Wood[29], and M. Zielińska[2,30]
Published 23 April 2014

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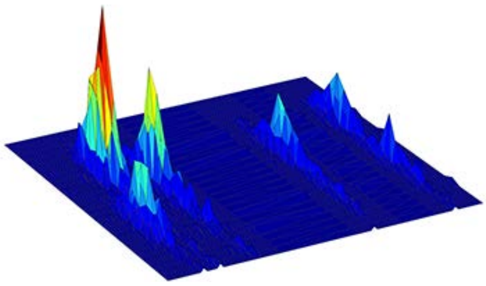
2. News to Report

a. Picking Nuclei with Lasers. The study of atomic nuclei with alpha, beta, and gamma-ray spectroscopy can elucidate details of nuclear structure, from the ordering of shell-model levels to the exact shape of the nuclei. Even nuclei far from stability, i.e., with short lifetimes, can be studied by creating them with nuclear reactions at large accelerators and delivering them quickly (sometimes within just 100 milliseconds) to a measurement apparatus. Although different isotopes can be separated with magnets, a great experimental challenge is posed by the fact there are often several isomers present in a beam, which makes it hard to determine which radiation came from which isomer. As reported in Physical Review X, a research team led by Kieran Flanagan of the University of Manchester, UK, has demonstrated a new method that uses isomer-selective laser ionization to isolate a pure sample of each

isomer and deliver it to a spectroscopy chamber.
The scheme allowed the authors to separate different states and study in detail the neutron deficient isotopes of francium (Fr): $^{202-6}$Fr. The nuclear g factors were also determined by resolving the hyperfine levels of each isomer's atomic ground state. The measurements, carried out at the ISOLDE radioactive ion beam facility at CERN, showed that, as neutrons are removed from the closed shell at N=126, Fr isotopes begin to lose their spherical shapes sooner than the corresponding Pb isotopes with the same neutron number because of the polarizability of the additional protons outside of the Z=82 shell. The method, which should allow work with isotopes even further away from stability, opens up many new possibilities, including further studies of Fr and of other elements such as copper, polonium, and gallium.



Kara M. Lynch/CERN and University of Manchester

Synopsis from http://physics.aps.org/synopsis-for/10.1103/PhysRevX.4.011055 written by Gene Sprouse, submitted to UKNA by Thomas Cocolios thomas.elias.cocolios@cern.ch (Manchester)

b. DESIR / S3 / NFS: GANIL's future looks bright! A series of workshops were held at the end of March in GANIL, Caen (Normandy), to discuss the progress of the SPIRAL2 facilities. The building works are complete and everybody is looking forward to the physics to be made there! In the current timeline, the accelerator should start commissioning in the course of 2015, followed by the NFS (Neutrons For Science) facility, the S3 (Super Separator Spectrometer), the S3-LEB (Low Energy Beamline), and finally DESIR (Désintégration, Excitation et Stockage des Ions Radioactifs / Decay, Excitation, and Storage of Radioactive Ions) in the horizon 2018.
This workshop was the opportunity to get updated on the technical progress of the different groups around France and in Belgium, as well as address the physics programme: 94Ag, 100Sn and super heavy elements were everybody's focus! But there are other opportunities that may interest you too. Check the expected beam intensities (and add a pinch of salt!) at the following address: http://pro.ganil-spiral2.eu/events/workshops/desir-s3-nfs.
The UK was represented by Dr TE Cocolios (Manchester). He is in charge of the S3-LEB Decay & Identification Station and is involved in the S3-LEB programme. He and Dr P Campbell (Manchester) are also key participants in the LUMIERE facilities for collinear laser spectroscopy and beam polarisation.
If you have questions, do not hesitate to contact Dr TE Cocolios.
Contribution by Thomas Cocolios
thomas.elias.cocolios@cern.ch (Manchester)

c. Daresbury to build accelerator modules for ELI-NP. UK accelerator scientists have won a major contract with a European consortium tasked with delivering the most advanced and powerful gamma beam facility in the world. It will specialise in both basic and applied research, from investigating the processes that take place in the heart of stars, to industrial and medical applications.
The €5.5million contract (approx. £4.5m) has been won by the Science and Technology Facilities Council's (STFC) Daresbury Laboratory in Cheshire. The full €68.8million contract was awarded to a European consortium, EuroGammaS, which is led by Italy's Institute of Nuclear Physics (INFN). The EuroGammaS, consortium has been selected to develop the accelerator based gamma source, which will form part of a major new research facility, the European Extreme Light Infrastructure for Nuclear Physics (ELI-NP) in Romania.

Artistic impression of ELI-NP (Credit: ELI-NP)

Professor Susan Smith, Head of STFC's Daresbury Laboratory, said: "Winning this contract is fantastic news for STFC. It demonstrates that Daresbury Laboratory has the facilities and expertise to deliver next generation accelerator solutions anywhere in the world. As part of the EuroGammaS consortium, this contract strengthens STFC's international reputation and collaboration with Europe's leading institutes and commercial companies; it reinforces the UK as an international leader in this area."

For its part of the project, STFC will supply 22 accelerator modules which steer, control and measure intense beams of electrons that are accelerated to energies of more than 7 hundred, thousand, million volts. The high energy electrons are collided with an intense pulse of light from an extremely high power laser to produce the most brilliant tuneable gamma-ray beam available in the world. This is a technically complex system delivery which involves integrating, aligning and testing the radio frequency structures, high field magnets, vacuum chambers and controls. The accelerator modules will be assembled and tested at STFC's Daresbury Laboratory prior to delivery to the ELI-NP site in Magurele, Romania. Once operational, the facility will produce high intensity gamma beams of very precise energy that can then be used for nuclear physics experiments and other applications.

Taken from http://www.stfc.ac.uk/3122.aspx, contact Wendy Ellison wendy.ellison@stfc.ac.uk (STFC)

d. Study of the ^{44}Ti(α,p)^{47}V reaction and implications for core collapse supernovae. In December 2012 at CERN, days before the much anticipated end of the world and roughly six months after a particular discovery from the same place, an international team of physicists, led by the University of Edinburgh Nuclear Group, investigated the rate of destruction of Titanium 44 at energies reached in core collapse supernovae (CCSNe). Titanium 44 is a fundamental isotope for the description of these phenomena. The work done at the REX-ISOLDE facility was part of a core area of the STFC funded UK science programme, and reported at the time in the UK news from CERN [1]. Recently published findings [2], from this experiment, suggest that existing CCSNe models might be able to predict more accurate ^{44}Ti ejecta content than previously thought. Mainstream science media, such as New Scientist [3, 4], have been relaying the information, highlighting the dynamism of the European nuclear physics community and the key involvement of UK nuclear physics groups.

Stars more massive than about eight times the mass of our Sun undergo a cataclysmic collapse of their core when nuclear fusion becomes endothermic, as nuclear binding energy maximises. The description of what happens next has had several successes, especially when major predictions could be tested against the observation of SN1987A, but many areas, not the least being the actual explosion, remain shadowed. Several models have been developed to try and tackle those issues and it has been showed that their capacity to predict an accurate quantity of ^{44}Ti produced in the explosion is a determining parameter for acceptance. This is why astrophysicists are critically in need of precise measurements of reactions affecting the final amount of ^{44}Ti from nuclear physicists, and at the top of those is the destructive reaction ^{44}Ti + ^{4}He -> ^{47}V + ^{1}H. However the road to success, for us nuclear physicists, resembles more the rugged Scottish countryside than the smooth tarmac of Silverstone. The biggest obstacle that the team, mainly at Edinburgh and at the Paul Scherrer Institute in Switzerland, has overcome is obtaining of a pure ^{44}Ti sample. The REX-ISOLDE accelerator team at CERN then made a brilliant effort to deliver the beam. Analysis of the data performed at Edinburgh, and of the thesis of Vincent Margerin, then provided hints at a slower destruction rate of ^{44}Ti in stars, bringing observation and prediction in closer agreement. New age for the Vela remnant could also be suggested. Subsequent experiments are being designed to confirm the findings.

[1] Star experiment on ISOLDE
[2] Margerin, V. *et al.* Phys. Lett. B 751 (2014), 358
[3] New Scientist, Radioactive waste used to peek inside a star explosion
[4] CERN, ISOLDE sheds light on dying starts

Contribution by Vincent Margerin, vincent.margerin@ed.ac.uk (Edinburgh)

e. Gamma-ray tracking gets results. On both sides of the Atlantic, there have been intense efforts in building arrays of segmented germanium detectors for γ-ray tracking. These are GRETA (Gamma Ray Energy Tracking Array) in the USA, and AGATA (Advanced GAmma Tracking Array) in Europe. Early versions have recently been in operation for physics experiments, and the first Physical

Review Letters using GRETA detectors were published in March and April this year [1,2]. The research for these was carried out at NSCL, Michigan State University. In the first paper [1], two-stage fragmentation enabled γ-ray transitions to be identified in neutron-rich ^{58}Ti and ^{60}Ti, providing stringent tests of the shell model. The second paper [2] reports lifetimes in ^{72}Kr, showcasing the oblate-to-prolate shape change in the 0^+-2^+-4^+ ground-band sequence.
Meanwhile, AGATA detectors have been in operation at both Legnaro and GSI, and a few papers based on Legnaro experiments have already been published [3]. Most recently, a study of neutron-rich ^{196}Os [4] shows it to be an excellent example of a γ-unstable rotor. These results illustrate the power of the new-style arrays for γ-ray detection, but they are still a long way off achieving 4π coverage, and the full capabilities of the γ-ray tracking itself are yet to be demonstrated. Perhaps there is a need for pooled trans-Atlantic resources. Further comments can be found in ref. [5].

[1] Gade, A. *et al. Phys. Rev. Lett.* **112,** 112503 (2014).
[2] Iwasaki, H. *et al. Phys. Rev. Lett.* **112,** 142502 (2014).
[3]http://npg.dl.ac.uk/agata_acc/AGATA_Publications.html
[4] John, P. R. *et al. to be published*
[5] Walker, P. M. *Nature Physics (May issue) in press*

Contribution by Phil Walker
p.walker@surrey.ac.uk (Surrey)

f. The 2014 IoP Nuclear Physics Group conference. The conference took place on 9th-11th April at the Selsdon Park Hotel, Croydon. It was preceded by an STFC Town Meeting, featuring presentations from STFC Chief Executive John Womersley, and chair of Science Board Alison Davenport, followed by a lively series of questions from the floor.
The main body of the conference consisted of a combination of UK and International invited speakers in plenary sessions, a series of parallel sessions with speakers spanning students, postdocs and more senior staff, and a poster session. The organising committee awarded the Best Student Poster prize to Chantal Nobs of the University of Brighton.

Sponsorship was provided by Canberra and Hamamatsu, who both attended the conference, and by the IoP Group. The hotel provided a rather grand setting, and the weather, on the last day, allowed the delegates to spend some of the lunch break enjoying the views from Selsdon's elevated position.
During the meeting, discussions about next year's venue were held, with a joint congress with the Particle and Astroparticle groups planned for next year, and the University of the West of Scotland kindly agreeing to host the year after.
Contribution by Paul Stevenson, Conference Chair p.stevenson@surrey.ac.uk (Surrey)

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3. Outreach Activity

Public Talk. On 11th April, Paul Stevenson gave a talk at West Sussex Geological Society entitled 'Isotope Geology'.
Contribution by Paul Stevenson
p.stevenson@surrey.ac.uk (Surrey)

Nuclear Physics Public Engagement Website. A new nuclear physics section has been added to the STFC public engagement website http://www.stfc.ac.uk/NuclearPhysicsForYou. The idea behind this website is to gather all relevant information about the UK nuclear physics community in one place so we can direct enquiries from the public, students and teachers to the webpages. The website currently includes pages on:
What is Nuclear Physics?
Atoms, Nuclei, Elements and Isotopes
Radioactivity
Nuclear Astrophysics
Nuclear Applications
Research Group/Speakers Contact List
Example Outreach Talks

Nuclear Physics Resources.
The webpages went live at the end of March and are currently in desperate need of pictures. Please have a look and send any pictures, feedback and ideas for additional content to Elizabeth Cunningham.
Contribution by Elizabeth Cunningham, e.cunningham@surrey.ac.uk (Surrey)

Nuclear Physics Outreach Resource. STFC's Public Engagement team have provided the funding to develop a nuclear physics resource that would be available for free for everyone in the nuclear physics community to hand out at their talks/events. Development of this resource is at an early stage and it has been suggested that it could take the form of a poster with the different research interests of UK nuclear physicists on one side and everyday applications of nuclear physics on the other side. If you have any ideas or would like to be involved in the development of this resource please get in touch with Elizabeth Cunningham.
Contribution by Elizabeth Cunningham, e.cunningham@surrey.ac.uk (Surrey)

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4. Media Interactions

Radioactive waste used to peek inside a star explosion
Radioactive waste has helped us peer inside a star explosion and solve a long-standing mystery about the cosmic origins of chemical elements.

http://www.newscientist.com/article/mg22229632.800-radioactive-waste-used-to-peek-inside-a-star-explosion.html#.U0ZuLeaSzRq

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