

The Future is...unclear

To me there is no doubt about the enormous benefits the European Union has given to research and higher education for many decades. Large scale research and training initiatives, such as LA³NET, simply would not have happened without the framework programmes of the EU.

The decision for Brexit has now brought a highly uncertain and unpredictable future both for the EU and the UK. It is anticipated that the exit negotiations will take a lot of effort for many years which will divert attention from real issues, such as dealing with the political and economic effects of the 2008 global financial and economic crisis.

Physics and engineering in the UK have been very well supported by EU funding. The FP7 and Horizon2020 research programmes have allowed us to establish no less than 5 dedicated Marie Curie networks in accelerator science and related technologies which in total have been in charge of the training of more than 90 Fellows. These were found to be of enormous benefit to the international research community with high impact on both, science and society. But there is so much more at stake than "only" research funding.

Clearly, there are also huge benefits in the free movement of EU researchers and students. Research and education is international in its nature and I consider it important that free exchange of people and ideas between the UK and the international community, and in particular Europe, are maintained. When the UK are now negotiating a new relationship with the EU it will be of highest importance to ensure that no unnecessary barriers are put in place.

On a more positive note I am delighted to inform you that registration for both our workshops in Paris, covering [laser ion sources](#) and [novel acceleration techniques](#), is now available online. As you can tell from the websites, there will be an exciting scientific programme and ample of opportunity to discuss the latest research results, as well as setting up new research collaborations and initiatives. These clearly are events that should not be missed and I hope to see all of you in Paris.




Prof. Carsten P. Welsch, Coordinator

Special Interest Articles

- Researcher Careers Workshop in Krakow
- Registration now open for LA³NET Topical Workshops

Individual Highlights

- Research Highlights
- Fellows News
- Partner News

Research News

Pengnan Lu's results published in NIMA

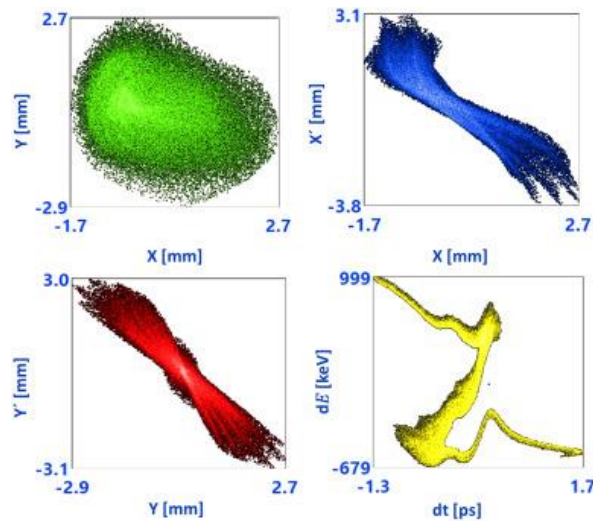


The results of Pengnan's project developed within LA³NET and presented at the final LA³NET conference have recently been published in Nuclear Instruments and Methods in Physics Research A.

The paper presents simulation of ELBE SRF gun II for high-bunch-charge applications. The SRF gun at ELBE will benefit most of the local user beamlines for future high-bunch-charge operations. Parallel to its development, simulation-based investigations have been performed to improve the beam quality for THz experiments and Compton backscattering experiments. These two applications have the most challenging requirements: THz experiments benefit significantly from short bunch lengths at the sub-ps level, while Compton backscattering experiments demand small transverse beam sizes of about

30 μm . The beam dynamics of the SRF gun are simulated with ASTRA and the beam transport is optimized using Elegant. Important physical effects included in simulations are introduced first, where the interesting phenomenon of "slice mismatch" is generally quantified and numerically studied. Afterwards, beam transport strategies and optimization methods are proposed which are based on the specific settings of ELBE but also applicable to similar accelerator setups. Finally, optimizations of the SRF gun and the beam transport in ELBE are presented.

Results show that the SRF gun is capable of providing 500 pC bunches for both applications with better beam qualities than the currently 100 pC bunches supplied by the existing thermionic DC source.



Phase space projections of a 500 pC bunch for the THz experiments.

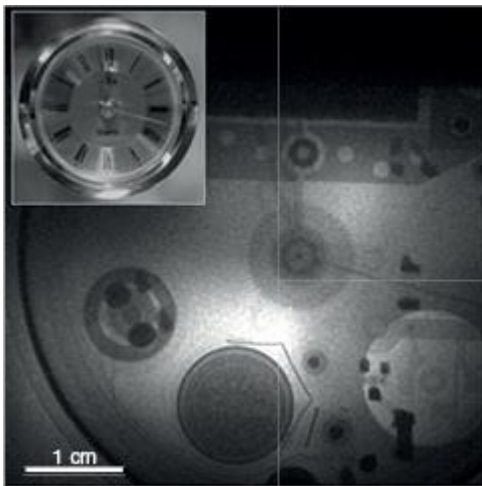
Adapted from:

Simulation of ELBE SRF gun II for high-bunch-charge applications, P. Lu, A. Arnold, J. Teichert, H. Vennekate, R. Xiang, Nucl. Instr. Meth. A (2016). [doi:10.1016/j.nima.2016.05.087](https://doi.org/10.1016/j.nima.2016.05.087)

Andreas Döpp's collaboration with LOA yields important results

Two papers have been authored recently by Andreas, presenting results of collaboration with the group led by Prof. Victor Malka.

In 'An all-optical Compton source for single-exposure x-ray imaging' published in *Plasma Physics and Controlled Fusion Control* the authors prove that laser wakefield based Compton scattering provides unique properties that may be of interest for ultrafast pump-probe experiments, e.g. for initial fusion research. They present results on a single-pulse scheme that uses a plasma mirror to reflect the drive beam of a laser plasma accelerator and to make it collide with the highly-relativistic electrons in its wake. The accelerator is operated in the self-injection regime, producing quasi-monoenergetic electron beams of around 150 MeV peak energy. Scattering with the intense femtosecond laser pulse leads to the emission of a collimated high energy photon beam. Using continuum-attenuation filters the authors measure significant signal content beyond 100 keV and with simulations estimate a peak photon energy of around 500 keV.



The picture shows a single-exposure x-ray image of a clock with a photography as inset.

The source divergence is about 13 mrad and the pointing stability is 7 mrad. It was demonstrated that the photon yield from the source is sufficiently high to illuminate a centimeter-size sample placed 90 centimeters behind the source, thus obtaining radiographs in a single shot. It was therefore shown that the photon flux of a single shot is sufficient for imaging of macroscopic objects. Beyond applications in fundamental research, the source has also promising properties for medical and industrial applications.

'Energy boost in laser wakefield accelerators using sharp density transitions' was published in *Physics of Plasmas* and presents studies of the possibility of increased electron energy gain using density tapering. The energy gain in laser wakefield accelerators is limited by dephasing between the driving laser pulse and the highly relativistic electrons in its wake. Since this phase depends on both the driver and the cavity length, the effects of dephasing can be mitigated with appropriate tailoring of the plasma density along propagation. Preceding studies have discussed the prospects of continuous phase-locking in the linear wakefield regime.

However, most experiments are performed in the highly non-linear regime and rely on self-guiding of the laser pulse. Due to the complexity of the driver evolution in this regime, it is much more difficult to achieve phase locking. As an alternative, the authors study the scenario of rapid rephasing in sharp density transitions, as was recently demonstrated experimentally. Starting from a phenomenological model, they deduce expressions for the electron energy gain in such density profiles. The results are in accordance with particle-in-cell simulations, and gain estimations are presented for single and multiple stages of rephasing.

Adapted from:

An all-optical Compton source for single-exposure x-ray imaging, A Döpp, E Guillaume, C Thauray, J Gautier, I Andriyash, A Lifschitz, V Malka, A Rousse and K Ta Phuoc, *Plasma Phys. Control. Fusion* 1–5 (2016). [doi:10.1088/0741-3335/58/3/034005](https://doi.org/10.1088/0741-3335/58/3/034005)

Energy boost in laser wakefield accelerators using sharp density transitions, A. Döpp, E. Guillaume, C. Thauray, A. Lifschitz, K. Ta Phuoc and V. Malka, *Phys. Plasmas* 23, 056702 (2016). <http://dx.doi.org/10.1063/1.4946018>



Network News

LA³NET presented in the Land of the Morning Calm



This year's International Particle Accelerator Conference ([IPAC'16](#)) took place at the BEXCO Convention Centre, located in the lively and scenic Haeundae District of Busan, South Korea. IPAC'16 was the seventh International Particle Accelerator Conference, a conference that rotates annually between Asia/Oceania, Europe, and the Americas. Since 2010, IPAC has been the premier event in the field of particle accelerators, attracting over 1,500 experts from accelerator laboratories and universities around the world.

Project Coordinator Prof. Carsten P. Welsch presented a poster about some of the recent research highlights from the LA³NET. He also summarized the numerous training events, such as international Schools, Topical Workshops, Conferences and Outreach events that these large scale initiative have organized over the years.



The LA³NET project was also present in the now traditional stand of the University of Liverpool at the conference exhibition, attended by LA³NET project manager Magda Klimontowska and fellow manager Dr. Ricardo Torres.

LA³NET Coordinator announced as Head of Liverpool Physics

The University of Liverpool has just announced LA³NET Coordinator Prof. Carsten Welsch as next Head of the [Department of Physics](#). Following an international search process, he will take up this important role for a 5-year term later this year.

Professor Welsch's research covers the development and experimental exploitation of particle accelerators and light sources. He has a particular focus on the design and optimization of Frontier Accelerators, such as the Large Hadron Collider at CERN and its upgrade programs; Novel Accelerators, including dielectric laser accelerators and particle-driven plasma wakefield accelerators; Accelerator Applications with a focus on medical applications, laser applications and compact radiation sources. He has also initiated and coordinated the European Innovative Training Networks [DITANET](#), [oPAC](#), [LA³NET](#) and [OMA](#) from the [Cockcroft Institute](#)

and has successfully completed a number of multimillion pound projects that link him to the world-wide accelerator community.

Prof. Welsch said: "I am delighted and honoured to accept this new role. It brings with it a number of challenges and I am keen to consolidate the work that the previous Head of Department, Prof. Touramanis, has already done."

He went on to say that "Liverpool is one of the UK's leading centres for physics research, with a proud history of discovery that goes back more than 100 years. The department is internationally known for its excellent research in particle and nuclear physics, condensed matter physics and accelerator science. I look forward to building on our reputation to enable world-class research, provide excellent teaching and continue to attract the very best students and researchers."




LA³NET Events

Researcher Careers Workshop in Krakow



LA³NET organised a **Researcher's Career Workshop and Fellow Re-union** hosted in the beautifully preserved city of Krakow, Poland, June 26th - 28th, 2016. Executed by LA³NET project manager Magda Klimontowska, the event simultaneously acted as an important opportunity for researchers to explore career options and as a reunion for LA³NET and [oPAC](#) Fellows.

Krakow greeted all participants with some stunningly sunny weather which paved the way for an active Sunday. Various Fellows flocked to a conference room inside of the Campanile Hotel for an interactive sightseeing game aptly titled "The Disappearance of Professor Einstein Jr." in which the participants were divided into teams and competed to solve the professor's disappearance by finding clues and completing intellectual challenges around Krakow's old town. The competition involved orienteering, riddles and even climbing 271 steps up to the trumpeters room of St. Mary's Basilica. Completion of these

challenges allowed the participants to discover the location of the elusive Professor who was waiting in the "W Starej Kuchni" restaurant, where the weary contestants were rewarded with a plentiful banquet of Polish cuisine.

Monday began with an early start as the attendants gathered on the panoramic top floor of Krakow's International Cultural Centre in preparation for the upcoming presentations. The workshop began with LA³NET Coordinator Prof. Carsten P. Welsch, who introduced the meeting with a talk on researcher career pathways and also spoke later in the afternoon on careers in academia. Other contributions to the event included EU Project Manager Dr. Ricardo Torres' presentation about his personal experience on an alternative career path, and former LA³NET Fellow Ms. Alexandra Alexandrova who spoke about running a spin-off company, using her own experiences as CEO of D-Beam Ltd. for reference.

The Careers Workshop covered an extensive range of career prospects presented by representatives of various organisations and backgrounds. In the morning session Mr. Dawid Gacek (Regional Contact Point for EU Research Grants from the Tadeusz Kościuszko University of Technology in Krakow), Prof. Dr. Hagit Amirav (VU University Amsterdam) and Dr. Szymon Walczak, Dr. Marcin Hajduk, Dr. Marta Buchalska (National Science Centre, Poland) all gave excellent presentations regarding researchers applying for grants.



Before lunch, Ms. Claudia Wegner-Wahnschaffe promoted Find Your Pension project, which aims to assist mobile researchers find and organise information on their pensions, and Mr. Seamus Hagerty (CERN) spoke on pursuing a career in a large-scale research centre.



The afternoon also included Dr. Janusz Harasimowicz (Elekta), who talked about career progression from academia to industry, Dr. Sławomir Wronka (National

Centre for Nuclear Research and ImagineRT, Poland) who gave a presentation on managing a spin-off company and finally Dr. Piotr Tracz (ELI – NP) who spoke in-depth about a new nuclear facility for research based in Romania.



The following day, after a successful workshop, the Fellows were treated to a visit to [Solaris](#) - the Polish National Synchrotron, which involved detailed talks on the Synchrotron from several members of the Solaris team.



In addition to this, there was a comprehensive tour led by Machine Deputy Director, Dr. Adriana Wawrzyniak, which involved the group getting to see exactly what the Synchrotron consisted of and how it worked.

Overall, the entire excursion was found to be a resounding, and rewarding, success.

Registration now open for LA³NET Topical Workshops!

Topical Workshop on Novel Accelerators

24th – 26th October 2016, Paris

LA³NET Topical Workshop is focused on techniques using lasers for particle acceleration. The workshop will cover the science and technology of novel acceleration schemes for ion and electron beams including:

- Laser-driven wakefield acceleration
- Dielectric laser acceleration
- Beam-driven wakefield acceleration

Scientific, medical and industrial applications
Each topic area will consist of invited and contributed talks of 30 minutes duration. All participants in the workshop are invited to use the 'Submit a new abstract' link to upload their abstracts. There will also be a dedicated

session to discuss future funding opportunities in view of joining all the above areas. The workshop will take place at Université Pierre et Marie Curie – Campus des Cordeliers, Paris. The cost for attending the workshop is **250,- EUR**. Fees will include a reception, workshop dinner and coffee breaks.

Registration deadline 31st August 2016

Abstract submission deadline 12th August 2016

For full details and registration please visit <https://indico.cern.ch/event/527727/>



Topical Workshop on Ion Sources

24th – 25th October 2016, Paris

This LA³NET and RESIST Topical Workshop is focused on techniques using lasers for particle resonant ionization. The workshop will cover the science and technology including:

- Pre-LIST techniques to enhance ion beam purity
- Advancements in efficiency, selectivity and spectral resolution
- New concepts and development of laser technologies for RILIS

Each topic area will consist of invited talks of 30 minutes and contributed talks of 20 minutes duration. All participants in the workshop are invited to use the 'Submit a

new abstract' link to upload their abstracts. The workshop will take place at Université Pierre et Marie Curie – Campus des Cordeliers, Paris. The participation is free of charge. A reception, workshop dinner and coffee breaks will be provided.

On Wednesday 26th October there will be a RESIST Project Day – by invitation only.

Registration deadline 31st August 2016.

Abstract submission deadline 12th August 2016.

For full details and registration please visit <https://indico.cern.ch/event/546015/>

Upcoming Events

LA³NET at IBIC'16



LA³NET will be present once again at the International Beam Instrumentation Conference (IBIC'16) in Barcelona from 11th – 15th September 2016. This year's edition is being organised by ALBA-CELLS and will include contributions from former LA³NET Fellows as well as from the network coordinator Prof. Carsten Welsch. The overall project will be promoted from the stand of the University of Liverpool at the industrial exhibition that accompanies the conference.

Meet us at Booth #10!

oPAC Topical Workshop on Beam Loss Monitors

15th – 16th September 2016, Barcelona



This two-day international workshop will provide an overview of the current state of the art in beam loss monitoring. It will discuss research and development being undertaken and ambitions to further improve the performance of existing and future devices. It will also focus on Monte Carlo tools and accelerator collimation systems. The workshop will take place at the Residencia d'Investigadores, close to the city centre.

In addition to invited talks, there will be opportunities for contributed talks which will be selected from all submitted abstracts.

Advance registration is required as places are strictly limited, and participants will need to contribute **100,- EUR** towards the total costs.

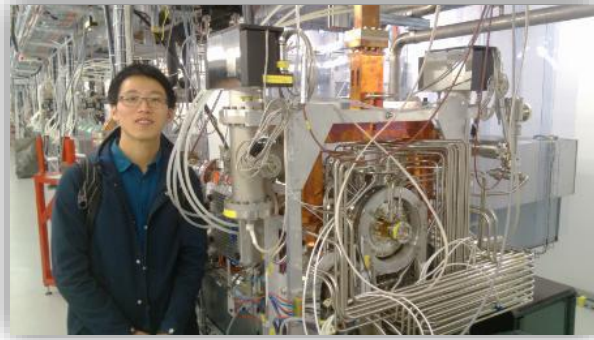
Registration deadline 31st July 2016 .

Abstract submission deadline 15th July 2016.

For full details and registration please visit <https://indico.cern.ch/event/527597/>

Fellows News

Yelong Wei visits PSI



Former LA³NET Fellow Yelong Wei from the University of Liverpool visited PSI between 21st - 24th March 2016. His visit aimed at questions related to the fabrication of grating microstructures and first dielectric laser-driven accelerator (DLA) experiments in collaboration between PSI experts and the QUASAR Group.

After some initial discussion with Dr. Soichiro Tsujino, group leader of Vacuum Nanoelectronics at PSI, two different DLA geometries, suitable for electron injection studies, as well as for beam diagnostics purposes, were identified. These shall be studied in the near future in numerical studies and experiment. Dr. Tsujino also took Yelong to a visit of their lab where he had the opportunity to see their laser facility, SEM (scanning electron microscopy), and many other fabrication and diagnostics devices.

Yelong also gave a talk to the PSI accelerator and vacuum nanoelectronics groups about his studies into dielectric laser-driven accelerators developed within the LA³NET project. Discussions on the injection offset for electrons, fabrication errors to influence the gradient and other critical questions were discussed in detail. Dr. Rasmus Ischebeck showed Yelong around their labs and experiment platform and explained more details about electron beam operation, their plasma gas jet, laser facility, grating microstructure used at SLAC, as well as several advanced beam diagnostics devices. A visit of the Swiss FEL complex completed his short visit which is currently followed by a longer secondment to PSI over the summer, targeting joint experiments.



Alex Alexandrova pushes commercialisation of research



Former LA³NET Fellow Alexandra Alexandrova is now exploring the business world, specifically the commercialisation of beam diagnostics methods for charged particle beams, and promoting the new company [D-Beam](#) internationally.

A [leaflet](#) has just been published to raise more awareness about the company's product portfolio. This is now going to be distributed at conferences and potential customers around the world.

Dr. Rui Pan's next career step



Dr. Rui Pan's graduation ceremony at the University of Dundee

Former LA³NET Fellow of STFC, the now Dr. Pan who graduated from the University of Dundee in June 2016, has recently secured a postdoctoral job position at DESY Hamburg. Rui will join the FS-FL group responsible for the THz beamlines at FLASH. His tasks will include participation in development and commissioning of the high-field THz sources at FLASH1 (in operation) and FLASH2 (under construction), supporting THz beamline users and contributing to the in-house research with the EO techniques.

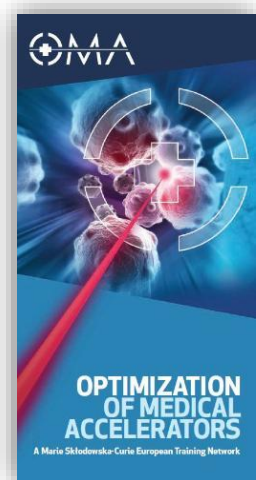
Congratulations and best wishes for the future, Rui !

Partner News

New Project Leaflet: Cancer Research using Accelerators

Research into medical applications has been part of the wider programme within LA³NET. The new European network [OMA](#) has started earlier this year and focuses specifically on medical applications of accelerators. Its training program is based on the experiences gained within LA³NET and will train 15 Fellows across three thematic work packages. OMA has just released a project leaflet that summarizes their research projects, gives an overview of the consortium, as well as of future training events that will be open to the wider medical and accelerator communities. You can access the leaflet via [this link](#).

Enjoy !



It's all about Outreach – Daresbury Open Week

Daresbury Laboratory has recently opened its doors to the general public. Saturday 9th July saw more than 7,500 visitors come to Daresbury Laboratory for the conclusion of the Daresbury Open Week 2016 (#DOW16). Following on from a week of events for school children and industrial partners, those who braved a very British summer's day were able to gain insight into the inner workings of an internationally renowned laboratory.

With dozens of activities there was something for everyone. These included tours to cutting-edge particle accelerators, visiting one of

world's most powerful microscopes, watching 3D printers in action as well as taking part in fun experiments to experience the virtual reality, see yourself frozen in time from a 360-degree angle in a film sequence, explore digital DinoZone or shoot lasers to pop the balloons. The whole day was filled with hands-on experiments and demonstrations guided by the scientists and engineers who also answered all sorts of science or engineering questions.

Children and adults, visitors and volunteers alike enjoyed this exciting event.





Acceleration re-defined once again in Pisa

In 1589 the Italian scientist Galileo Galilei performed in Pisa his ground-breaking acceleration experiments, observing balls accelerating down a ramp. He timed the rolling balls by counting his heart beat, finding that the "the spaces traversed were to each other as the squares of the times". Galileo's results violated the ancient theory from Aristotles and a few years later Galieo's contract as lecturer at Pisa University was not renewed. Nowadays school kids all over the world learn about acceleration with the famous formula from Galileo. The future of acceleration, this time related to efficient acceleration of elementary particles, was again discussed last week in Pisa, Italy.

Particle accelerator experts from around the world met together with experts from the laser and novel accelerator community to discuss the design of an innovative European Plasma Accelerator in the framework of the EuPRAXIA and EuroNNac projects. This science workshop took place from June 29th

to July 1st at Area della Ricerca in Pisa, Italy and was hosted by Istituto Nazionale di Ottica - CNR.

The design and science cases of novel plasma accelerators for beams of electrons are subject of intense studies. Progress in proof-of-principle experiments has led to the expectation that ground-breaking applications of plasma accelerators will be developed in the next years. The more than 120 registered delegates discussed the parameters and technical specifications required at the interfaces between lasers and plasmas, plasmas and particle beams, as well as particle beams and other applications such as Free Electron Lasers, High Energy Physics detectors and ultra-compact X ray devices. The aim was to collect the input from all interested parties in order to define a full parameter set that will be used as the core of a conceptual design that will be developed by the project partners until October 2019.



The Horizon2020 Project "European Plasma Research Accelerator with eXcellence In Applications" (EuPRAXIA) was funded by the European Union and started its work in November 2015. EuPRAXIA aims at producing a design report of a highly compact and cost-effective European facility with 5 GeV electron beams generated by plasma acceleration which could be used for photon science, high-energy physics, and other applications such as medicine or material processing.

The meeting was sponsored by INO-CNR, INFN, the European Network for Novel Accelerators (FP7/EuroNNac2), the European Coordination of Accelerator R&D project (FP7/EuCARD2) and the Horizon2020 Design Study EuPRAXIA.

All presentations and further information can be found on the workshop's [indico page](#). For more information about EuPRAXIA, please refer to the [project website](#).



QUASAR Group Overrun by School Children

This June and July, the [QUASAR Group](#), continued their commitment to the communication of their work to wider audiences as they held several whole-day outreach workshops for schools in the area, at [The Cockcroft Institute](#).



The Institute was overrun by more than 200 school children (or future scientists). Co-ordinated by project manager Ricardo Torres and a handful of volunteers (including LA³NET project manager Magda Klimontowska), the QUASAR team passionately set out to create an exciting and challenging day for the 12-15 year olds in an effort to encourage the pursuit of science as a career choice. With stimulated participation from local schools, the team of volunteers successfully managed to pique the interest of their junior guests and hopefully awaken some of their inner physicists.



Each event began with an informative and enthusiastic talk from LA³NET Co-ordinator Prof. Carsten Welsch, appropriately titled "accelerating you". The talk highlighted the key and most important areas of accelerator science which included: medical applications ([OMA](#)), antimatter and the Large Hadron

Collider. With humorous comparisons between "Hollywood" science and real science that kept the students engaged from the start, this was just the beginning.

The students spent some time watching planned demonstrations of various experiments however, the majority of the day was spent challenging them to create their own. In a mad flurry of masking tape, magnets, batteries and salad bowls, the students excitedly worked in groups with the volunteers to prove themselves as capable young physicists. As the students enjoyed building homemade salad bowl accelerators, Van De Graaff Generators and railguns, several students were also tasked with both filming and editing videos documenting their experiments and the process of making them.



After a well-deserved lunch (for both students and volunteers), there was still enough time for a short quiz and a very positive feedback session from the school kids, who showed promise and potential in their ability to adapt to the world of physics. Each workshop ended with vibrancy as the students displayed posters and videos detailing and demonstrating their work on the experiments. The videos displayed the students success, creativity and humour, which left the students, teachers and volunteers in high spirits at the end of the day.

This video gives an impression of the many things the students could enjoy during their time at the Cockcroft Institute:

<https://youtu.be/EuLyjzfP6K8>

The workshops were supported by the Royal Academy of Engineering Ingenious Award and the STFC Small Award schemes.



Miscellaneous

FindyourPension – Navigating within the European Pension Landscapes

Findyourgym, Findyourphone or Findyourlove; but FindyourPension? This topic is not expected to be the first on the list of google's most favourite websites. In fact, many people do not consider their old-age provision during younger years. They rely on their career and a somewhat growing prosperity until the time has come to retire.

However, this strategy might change when you are a mobile researcher - changing your jobs and pension systems frequently. In this case, it is crucial to understand a bit of the workings of pension systems in order to not forget who will pay your old-age pension some day...

FindyourPension is a website dedicated to mobile researchers working for universities and publicly funded research facilities. It helps you to find orientation and guidance in your pension biography by:

- Providing basic knowledge about the different sources of pensions in general and the different pension landscapes in the various European countries
- Finding your pension providers related to the listed research employers
- Giving answers to the most frequently asked questions in terms of professional mobility and pensions in the Pensions ABSs of the incorporated systems
- As of July 2016 the new feature FindyourPension- My Track

After the log in users can save and track their career- and pension biographies. This tool helps to document your pension path and also serves as an explanation tool on how pension entitlements are accrued. Here, it is also possible to add up the different pension claims accrued and thus better estimate the expected pension income. My track is available at www.findyourpension.eu.

Electron Gun Wanted

The Quasar Group from the Cockcroft Institute is looking for an electron gun able to provide about 1mA of current. There are no specific beam requirements – the gun shall be used as a residual gas based ionisation profile monitor.

In case you anyone could lend one out for a few months, please can you get in touch with:

Mr Vasilis Tzoganis
vtzogani@liverpool.ac.uk



SPONSORED BY THE



Vacancies

Vacancies within the QUASAR Group at the University of Liverpool / Cockcroft Institute

Research Coordinator

An exciting job opportunity as Research Coordinator (lecturer salary scale) will come up soon in the [QUASAR Group](#). This 5 year post will give the opportunity to work closely with the Group leader, Prof. Welsch, across the various research programmes of the group and take an important role in the day-to-day running of the Group. This will include contributions to existing European projects and collaborations. The current R&D includes beam diagnostics, medical accelerators, antimatter facilities R&D, beam dynamics studies, novel accelerators, and accelerator applications. Candidates will be expected to have an excellent research track record, including publications in high impact factor journals. Teaching and supervision experience, as well as experience in writing research grant applications are an advantage. For informal enquiries, please contact c.p.welsch@liverpool.ac.uk

Fellowship Opportunities

We invite expressions of interest for a number of prestigious Fellowships and grants, including [ERC Starting and Consolidator Grants](#), [Marie Curie Fellowships](#), and STFC [Rutherford Fellowships](#) all year around.

These funding schemes offer outstanding supporting and developing opportunities for time frames between 2-5 years and are an ideal platform for those who have already demonstrated their potential as outstanding researchers. We can provide access to world-class research infrastructures and help you develop your proposal into a competitive bid.

If you are interested in further details, please do not hesitate to contact Prof. Carsten Welsch at c.p.welsch@liverpool.ac.uk

Other Vacancies

[Marie Curie Early Stage Career Fellowship – OMA project](#)

Several locations around Europe

[58 permanent positions as Researcher in Experimental Physics](#)

INFN - Istituto Nazionale di Fisica Nucleare

[Numerous vacancies at Extreme Light Infrastructure](#)

ELI – NP Romania

[Marie Curie Fellowship – MEDICIS-Promed](#)

Geneva university hospital



Selected Publications

An all-optical Compton source for single-exposure x-ray imaging, A Döpp, E Guillaume, C Thauray, J Gautier, I Andriyash, A Lifschitz, V Malka, A Rousse and K Ta Phuoc, Plasma Phys. Control. Fusion 1–5 (2016). [doi:10.1088/0741-3335/58/3/034005](https://doi.org/10.1088/0741-3335/58/3/034005)

Energy boost in laser wakefield accelerators using sharp density transitions, A. Döpp, E. Guillaume, C. Thauray, A. Lifschitz, K. Ta Phuoc and V. Malka, Phys. Plasmas **23**, 056702 (2016). <http://dx.doi.org/10.1063/1.4946018>

Simulation of ELBE SRF gun II for high-bunch-charge applications, P. Lu, A. Arnold, J. Teichert, H. Vennekate, R. Xiang, Nucl. Instr. Meth. A (2016). [doi:10.1016/j.nima.2016.05.087](https://doi.org/10.1016/j.nima.2016.05.087)

Joke Box

Teacher: What is the formula for water?

Student: H, I, J, K, L, M, N, O

Teacher: That's not what I taught you.

Student: But you said the formula for water was...H₂O

Project Coordinator

Prof. Carsten P. Welsch
 Cockcroft Institute
 Sci-Tech Daresbury
 Keckwick Lane
 Warrington, WA4 4AD
 United Kingdom

PHONE:
 +44 (0) 1925 86 4352

FAX:
 +44 (0) 1925 60 3192

E-MAIL:
 carsten.welsch@cockcroft.ac.uk

Events

August 28 th – Sept 1 st 2016	ECR Ion Sources workshop , Busan, South Korea
Sept 6 th - 9 th 2016	MEDICIS-Promed ESRS General Training , Manchester, UK
Sept 11 th – 15 th 2016	IBIC 16 , Barcelona, Spain
Sept 15 th – 16 th 2016	oPAC Topical Workshop on BLM , Barcelona, Spain
Sept 25 th – 30 th 2016	LINAC 16 , East Lansing, MI, USA
Oct 24 th – 25 th 2016	LA³NET Laser Ion Source Workshop , Paris, France
Oct 24 th – 26 th 2016	LA³NET Novel Accelerators Workshop , Paris, France
Oct 25 th – 28 th 2016	PCaPAC 2016 , Campinas, Brazil

NOTICE BOARD

Remember to register for one of our two workshops this October. Places are strictly limited and fill up quickly!

[Laser Ion Source Workshop](#)
[Novel Accelerator Workshop](#)

DEADLINE FOR THE NEXT NEWSLETTER: 30th September 2016

About LA³NET

The exploitation of Lasers for Applications at Accelerator facilities for ion beam generation, acceleration and diagnostics is the goal of this new Network within the FP7 Marie Curie Initial Training Network (ITN) scheme. In this frame, research centers, universities and industry partners from across Europe will develop beyond-state-of-the-art techniques and technologies through a joint inter-sectorial training program for early stage researchers within a unique European partnership.

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 289191.



www.la3net.eu

Project Manager
 Magdalena Klimontowska

PHONE:
 +44 (0) 1925 86 4346

FAX:
 +44 (0) 1925 60 4206

E-MAIL:
 magdalena.klimontowska@cockcroft.ac.uk

Newsletter Editor
 Alexandra Welsch

PHONE:
 +44 (0) 1925 86 4051

FAX:
 +44 (0) 1925 60 4206

E-MAIL:
 alexandra.welsch@cockcroft.ac.uk