

Special Interest Articles

- Lasers and Accelerators Showcase in Liverpool
- Liverpool and Seville team up for oPAC's grand finale

Individual Highlights

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Physics, sun...and tapas

There are less than three months left until the start of our international conference on beam physics, beam diagnostics and simulation tools. The national centre for accelerators in Seville, Spain will be an ideal meeting point to present and discuss the latest R&D results, plan future projects and find collaboration partners. We have a range of excellent invited speakers confirmed and there are now only a few places left. Make sure you [register](#) before the submission deadline to secure a place. Several [scholarships](#) for early career researchers outside of the oPAC network are available with an application deadline end of this month. **Take part !**

The project's review meetings and Outreach Symposium on Lasers and Accelerators for Science and Society was a huge success with hundreds in attendance, many more following all talks online, and national and international media covering this unique event. Our Fellows have done a fantastic job in presenting their research projects and the Supervisory Board commended them on their excellent research results. The keynote speakers have put in extra effort to show the excitement that lies in our accelerator and laser R&D and I am optimistic that we managed to help to attract more students into science and engineering. I believe that it was an event that will be remembered by all who participated and an absolute highlight of our activities to date.

The project's Steering Committee critically reviewed the network's R&D progress, training program and impact on the wider accelerator and laser communities in its last meeting in June. It was found that oPAC has an impressive track record in excellent research done by our Fellows, joining a very wide community through our events and creating lasting impact.

I am delighted to announce that it was unanimously decided to continue most of the network's central activities beyond the original time frame of the project. We will continue communication of project achievements via our web site, social media and quarterly newsletters, present the project at selected conferences and organize at least two Topical Workshops in 2016.

This is an excellent outcome and a clear indicator that oPAC remains a much needed initiative.

I hope you will enjoy this newsletter edition and wish you a wonderful summer.



Prof. Dr. Carsten P. Welsch, Coordinator

Research News

Advanced Simulations of Optical Transition and Diffraction Radiation – Konstantin Kruchinin

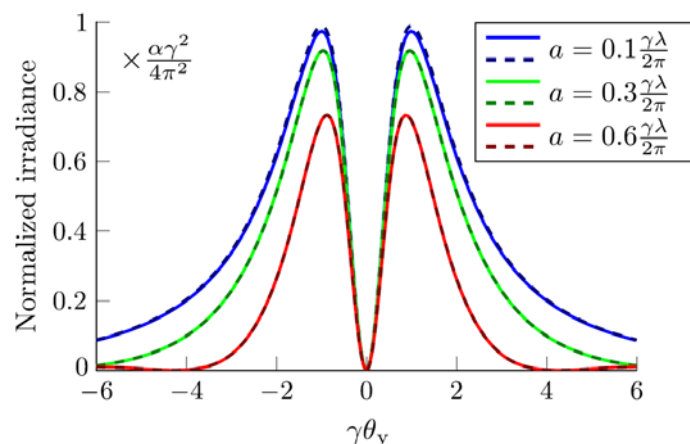
Measuring accurately the characteristics of charged particle beams is a key task in modern accelerator facilities. The diagnostic tools are practically the “eyes” of the operators, and their precision and resolution are crucial to define the performance of the accelerator.

In future linear colliders such as the Compact Linear Collider (CLIC) or the International Linear Collider (ILC), particle beams with extremely small emittances will be generated, requiring a precise control of the transversal beam size with a micron-scale resolution over long distances.

The transition radiation (TR) that appears when a charged particle crosses a boundary between two different media, and the diffraction radiation (DR) produced when a relativistic charged particle moves in the vicinity of a medium, provide two widely used methods for measuring electron beam parameters. However, the precision and resolution of TR and DR monitors are determined by how well the production, transport and detection of these radiation types are understood.

oPAC Fellow at Royal Holloway University of London **Konstantin Kruchinin**, has made important contributions to an article just published in Physics Review Special Topics – Accelerators and Beams that reports on simulations of TR and DR spatial-spectral characteristics using the Zemax advanced optics simulation software.

In this work, carried out in collaboration with a team of researchers from RHUL, CERN and Cornell University, advanced Zemax simulations of optical TR and optical DR were presented and compared with state-of-the-art theoretical models. With assumptions similar to theoretical boundary conditions, Zemax simulations of TR and DR agreed with the analytical expressions. Moreover, misalignment studies were carried out to study the limitations of real optical systems. Overall, this tool represents the most comprehensive approach to the design of a real diagnostics based on either optical TR or optical DR including all misalignment errors and optimization of a real optical system (including viewports, polarizers, filters, etc.).



Angular distribution of Diffraction Radiation in the far-field for various hole radii, showing the excellent agreement between theory (dashed) and simulations (solid).

T. Aumeyr *et al.* “Advanced simulations of optical transition and diffraction radiation”, [Phys. Rev. STAB 18](#), 042801 (2015).



Network News

oPAC puts a Ring on IPAC

IPAC'15, the sixth International Particle Accelerator Conference, was held in historic Richmond, Virginia, USA from 3rd to 8th of May 2015 at the Greater Richmond Convention Center. The oPAC Fellows made a total of twelve contributions to the scientific program, including posters from Emilia Cruz Alaniz (U. of Liverpool), Michele Carla (ALBA), Meghan McAteer (CERN), Michal Jarosz (ESS), Manuel Cargnelutti (Inst. Tech.), Héctor García Morales (RHUL), and Konstantin Kruchinin (RHUL). A special highlight was a talk about the commissioning of the new Beam Positioning Monitor electronics of the ESRF Booster Synchrotron by the oPAC Fellow at Instrumentation Technologies, Manuel Cargnelutti. He presented results of the system commissioning, demonstrating its high sensitivity and excellent performance at very low beam currents.



Manuel Cargnelutti (Instrumentation Technologies) presenting the new Beam Positioning Monitor electronics of the ESRF Booster Synchrotron.

The Fellows were joined at IPAC by oPAC Coordinator Prof. Carsten P. Welsch, who also presented a poster about the network, as

well as Dr. Ricardo Torres and Ms. Magda Klimontowska from the EU Project TEAM.



Magdalena Klimontowska and Ricardo Torres, project managers of LA³NET and oPAC respectively had a busy time promoting the network activities.

The latter presented the oPAC and LA³NET projects to the international accelerator community via a dedicated stand, thus promoting the networks' Fellows and helping them attract future job opportunities. The stand displayed the projects' brochures, selected videos produced by the Fellows and gave ample of opportunities for discussion with network partners and researchers from outside of the projects.

The conference featured many interesting presentations, including talks about the LHC upgrade, in which oPAC is already heavily involved in. The conference was found to be an ideal meeting point allowing for fruitful discussion with collaboration partners from all over the world.



oPAC Events

Lasers and Accelerators Showcase in Liverpool

oPAC and its sister network LA³NET joined forces to organize a one-off review meeting and public event to celebrate the project's achievements and their relevance to society. The international Symposium on Lasers and Accelerators for Science & Society, coordinated from the University of Liverpool, took place on the 26th of June in the Liverpool Arena Convention Centre. The event was a sell out with delegates comprising the projects Supervisory Boards, 100 researchers from across Europe and 150 local A-level students and teachers. The aim was to inspire youngsters about science and the application of lasers and accelerators in particular.



Young people had the opportunity to see how the Fellows, just a few years older than themselves, are pushing back the boundaries of knowledge.



Professor Brian Cox (University of Manchester) is well known to British public for his television programmes about the origins of the Universe.

'Discovering the unknown', 'innovation', 'beating cancer', 'pioneering new technology', 'a possible career' – these were comments from sixth-formers, who among researchers, students and general public, attended the Symposium.

It is now possible to share their enthusiasm through online presentations, which includes talks from **renowned scientists** such as Professor Victor Malka (LOA, France), Dr Ralph Aßmann (DESY, Germany) and Professor Brian Cox (University of Manchester, UK), best known to the British public for his television programmes about the origins of the Universe.

The Symposium also showcased a portfolio of projects from the **oPAC and LA³NET Fellows** through an interactive poster session with questions and answers, giving young people the opportunity to see how scientists just a few years older than themselves are pushing back the boundaries of knowledge.

Organiser Professor Carsten P. Welsch explains: "This discipline (accelerator science) offers enormous opportunities for scientific discovery but also professional development. Research Fellows from the training networks oPAC and LA³NET have in three years become experts in their discipline but also have developed skills in physics, engineering, IT, data analysis and project management. The involvement of partners from industry and academia and the opportunity to work at research institutions across Europe has provided training that would be impossible by one company or one country alone."

In addition to the Fellows' poster session top scientists gave presentations to demystify this area for more people.

Professor Grahame Blair, Executive Director of Programmes for the Science and Technology Facilities Council (STFC), explained how particle accelerators can be used as research tools.



Prof. Grahame Blair, Executive Director of the Science and Technology Facilities Council, inspired the audience with his talk "Particle Accelerators – Engines of Discovery".

He explained that particle accelerators can recreate the conditions of the Big Bang, making it possible to test fundamental theories about the universe.

He says: "The Large Hadron Collider at CERN enables us to create unique conditions not seen anywhere else on Earth and it was successful in allowing us to test many of the most advanced theories. In the process we are also learning about how to create high-energy particle beams and control them effectively. This is where beam diagnostics are important; by developing these tools the technology can be used in other applications."

Prof. Blair explains that accelerators are used to create x-rays for use in material science, chemistry and biology and that the Diamond Light Source was used, for example, to fast-

track the development of a new type of vaccine during the foot and mouth disease outbreak. Access to this technology and skills is creating a cluster of high-technology companies at Daresbury working in this field and creating exciting career opportunities for young people.

Paul Taylor, Head of Physics at Merchant Taylors' School, commented that the event had been inspiring for his students, many of whom are now considering studying physics at Liverpool or Manchester universities.



The talks by world-class scientist attracted the attention of 150 A-levels students.

The presentations from the Symposium are now edited and prepared as an online resource, providing a unique introduction to this fascinating area of science and technology. To see them, visit the website <http://www.opac-project.eu/symposium>.



Prof. Carsten P. Welsch and Prof. Brian Cox with some of the school girls who attended the symposium.

Advanced Researcher Career Skills Workshop

The transition to permanent employment from postgraduate research is a challenging prospect in an ever more competitive job market. The oPAC Fellows have attended a four-day Advanced Researcher Career Skills Workshop at the University of Liverpool from 22nd to 25th of June.



The highly interactive training sessions were well received by the participants.

The workshop provided dedicated and practical support for a cohort of highly-skilled researchers to help them in their future careers. This included support in career

planning by providing practical and specific advice on CV writing and interview skills, writing competitive grant applications, advanced project management, and science communication and networking. The university's business gateway team contributed dedicated sessions on intellectual property rights, commercialization and entrepreneurship that were very positively received by the course participants.

Prof. Carsten P. Welsch who directed the overall training said: "The workshop provided an excellent environment to discuss effective strategies for communicating research achievements, to develop skills that prove useful in job interviews and create awareness of the wider societal impact of research, including commercialization. We have received excellent feedback from the course participants and are convinced that this will help them in their next career moves."



Photograph of the oPAC and LA³NET Fellows with Prof. Carsten P. Welsch and members of his EU Project TEAM.

Upcoming Events

Liverpool and Seville team up for oPAC's *grand finale*



As the oPAC project comes to an end, the network's coordination team at University of Liverpool and the Centro Nacional de Aceleradores (CNA) are preparing its *grand finale* in the form of an International Conference on Accelerator Optimization. The conference will take place from 7th to 9th October 2015 in Seville, at the facilities of the CNA.



Centro Nacional de Aceleradores / University of Seville

Confirmed invited speakers include Dr. Oliver Brüning (Head of accelerators and beam physics group at CERN), Prof. Dr. Oliver Kester (Director of the Facility of Antiproton and Ion Research at GSI), Mr. Yves Jongen (founder and chief research officer of IBA Group), and Prof. Carlo Bocchetta (Project leader at the

Polish Light Source – Solaris). The conference will offer the opportunity to present contributed talks and posters to all the accelerator science community. The topics covered include, but are not limited to, beam dynamics, beam diagnostics, simulation tools, and control and data acquisition systems. The conference will also promote the research outcomes from oPAC, fostering further collaborations between oPAC partners and participating scientists from outside the network. The proceedings will be published in a special edition of Physical Review STAB, giving the Fellows an excellent opportunity to disseminate their work.

Registration for the conference is now open and the deadline for submission of abstracts is the 31st of July. The fee of €600 includes hotel accommodation with breakfast, conference documentation, lunches during the event, a cocktail reception, the conference tour and formal dinner, as well as daily transport from the hotel to CNA. Instructions for registration and further information about the event can be found on the conference indico page: <https://indico.cern.ch/event/380975/>. The oPAC network is much obliged to CNA and Prof. Joaquín Gómez Camacho for hosting the conference.

Fellows Activity

Interview with Laura Torino

Laura Torino is an oPAC Fellow at ALBA-CELLS in Barcelona (Spain); she joined the network in November 2012.

You are from Italy and you did your degree there, how did you end up in ALBA?

I studied particle physics but I did a course on particle accelerators, and when I had to choose a topic for my master thesis I asked the teacher and he told me there was a new accelerator near Barcelona, I checked it out, and... here I am!

What did ALBA have to attract you there?

The most interesting for me was that it was a new accelerator. In Italy there are other accelerators but they are more established so it is more difficult to do new things there. In ALBA there was a lot of technology to be developed and there it was really possible to get hands-on experience on accelerator physics from scratch.

Did you find it difficult to live in a foreign country and work in a different language?

Italian and Spanish are more or less similar, but the technical and work-related topics at the beginning were not easy; you have to learn little by little... it's not a problem.

You are working on optimization of beam instrumentation for light sources, could you explain in simple terms, what is your project about?

ALBA is a source of synchrotron radiation, what it does is to accelerate electrons to produce light. The characteristics of light emitted by the electrons are somehow linked to the electron beam itself so analyzing the light we can learn about the electron beam. My job is basically to catch the light and analyze it to learn more about the electron beam.

What do you like the most about your work?

What I enjoy the most is that I work with people. I always have to coordinate with different people to achieve what I want to do. My project is relatively small, but obviously a particle accelerator is something quite big and complex, I cannot do everything on my own and I always have to talk with other colleagues to obtain what I need, and I like that.

Some people see research scientists as geeks who spend the whole day in the lab. Do you have anything to say that contradicts this picture?

(Laughs) Maybe it's true that we spent the a lot of time in the lab, so it is for that reason that we need to go out and see people, we are normal people at the end of the day. We may give a weird impression but we are nice folks (laughs).

What are the goals you want to achieve in your career? Do you have any plans?

My goal is to find a permanent position, although it is very difficult, especially when you are young. It takes very long to get there but my goal is to find a place to settle. Now it is complicated because scientists at the beginning have to move around a lot, with the PhD, then a postdoc, another postdoc... but it would be good to find a place to settle for good, if the job is good and I like it of course, otherwise it makes no sense!

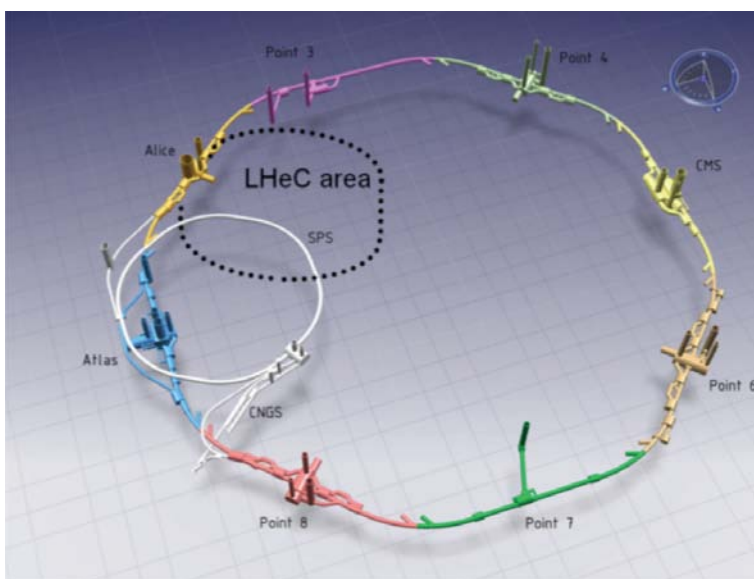


LHeC goes Tex-Mex

The oPAC Fellow at University of Liverpool Emilia Cruz Alaniz was recently invited to Dallas, Texas, on behalf of the LHeC Study Group, to present the status and prospects of the LHeC and FCC-he projects at the DIS 2015 conference. This was the latest edition of a series of annual workshops on deep-inelastic scattering and related subjects, covering a large spectrum of topics in high

energy physics. Emilia's talk was delivered for the working group in Future Experiments. It was certainly an honour for Emilia to represent the LHeC Study Group in such a forum.

Congratulations!



LHeC layout

oPAC Training bears Fruit

One of the oPAC Fellows at CERN, Meghan McAteer, has recently been offered a position at the Helmholtz-Zentrum Berlin für Materialien und Energie (HZB) to work on the commissioning of the high-current 50-MeV Energy Recovery Linac bERLinPro.

bERLinPro is a test facility aimed at demonstrating the ERL principle at ultimate beam properties – highest average current and most dense electron bunches. This facility will put all subsystems relevant to large-scale ERLs to the test and enable the rigorous

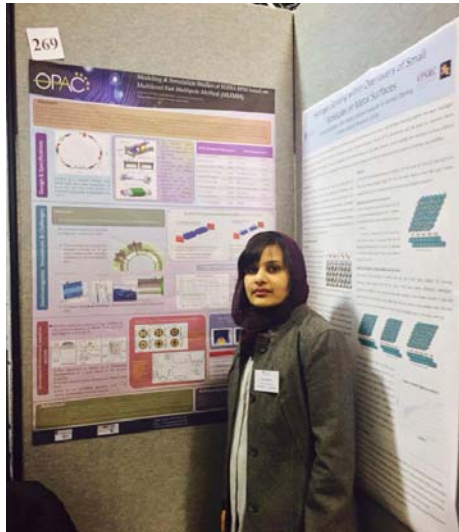
comparison of theory with the real world. Meghan says “This will be a very exciting opportunity for me to gain familiarity with a wider variety of accelerator physics challenges”.

This is not only excellent news for Meghan but also for the oPAC project, as it shows that it is succeeding in its aim of providing human resources for the increasingly demanding accelerator community.



Fellows at Poster Day in the University of Liverpool

The oPAC Fellows at University of Liverpool Blaine Lomberg and Sehar Naveed have participated in a Poster Day organised by the Postgraduate Researchers Development office and the University's Centre for Lifelong Learning.



Sehar Naveed at the Poster Day in the University of Liverpool

The event took place the 26th of March at the Liverpool University Guild of Students, and it offered all postgraduate students in the 2nd and 3rd year the opportunity to present their work and interact with academic staff from across all faculties. The aim of the Poster Day was to present and discuss ongoing R&D work with academic colleagues from outside everyone's own field and obtain feedback from senior academics and Fellow research students.

Blaine Lomberg used the event to discuss his research and present initial results in beam halo monitoring and how optical beam

diagnostics are very important for the optimization of particle accelerators. He commented: "I was very surprised of the research carried out in the three different faculties and how the studies are very novel and at the cutting-edge." Sehar also described the day as a stimulating event to share opinions and to discuss research freely. Around 300 postgraduate students showcased their work at the 2015 poster day which was judged by academics from three Faculties.

The event organiser and Head of PGR Development, Dr Richard Hinchcliffe, said: "The excellent quality of all the posters on exhibition is an indicator of the quality of research at the University. The variations between subject areas and the differences in approaches to communicating research to the public are a great fascination."



Blaine Lomberg at the Poster Day in the University of Liverpool

Heavy Machinery for Kids

Few things are more attractive to kids than big machines. “Controlling big physics machines” was the title of an outreach talk that oPAC Fellow at Cosylab, Pavel Maslov, has recently given in two schools in the Slovenian capital Ljubljana.

Atom smashers, fusion reactors, radio telescopes, and cancer treatment facilities were all featured in Pavel’s talk. He gave an overview of the challenges related to the operation and design of their control systems,

and talked about the existing opportunities for young researchers in the frame of the Marie Curie Initial Training Networks.

Pavel encouraged the students to pursue a career in science, technology, engineering and maths, to get a chance to “play” with these powerful machines. Hopefully they will have learnt the lesson that *power is nothing without control*.



Pavel Maslov (Cosylab) inspired school students with a talk about controlling big physics machines

Sehar Naveed visits Ankara University

oPAC Fellow Sehar Naveed attended an intense workshop on the ‘Programming and Implementation of Multi Level fast Multipole Method (MLFMM)’ between May 7th – 18th 2015. The workshop was organized and hosted by Dr. Ozgur Ergul, Associate Professor at Department of Electrical and Electronics Engineering and the principal investigator of the Computational Electromagnetics research group (CEMMETU) at the Middle East Technical University (METU), Ankara, Turkey.

The workshop was an extension of the last year’s lecture series. It focused mainly on the complex theoretical concepts underlying the method, the structure and the implementation of the algorithm and the derivation of fundamental equations in coding environments such as MATLAB. After the first week of the workshop, there were several brain-storming sessions related to the

implementation of MLFMA on accelerator structures in general and on low ion Beam Position Monitors in particular. One of the most interesting questions that need to be addressed is the mathematical modelling of the BPMs and the particle beams according to the challenging demands of MLFMA. As the method has been successfully verified for the waveguide structures but to implement it for particle beams is interesting and has potential to bring novel results to look forward to.

Sehar described her workshop experience as very exciting, engaging and closely related to her project. The workshop provided her an opportunity to expand her network connections and to discuss her research with other scientists working on the same method but for different electromagnetic applications. She has also enjoyed the Turkish cuisine and the hospitality to the core!



Partner News

Accelerator Experts discuss best Training Schemes



Participants of the Joint Universities Accelerator School meeting hosted by the University of Liverpool

The annual meeting of the Joint Universities Accelerator School (JUAS) took place on 23 and 24th April 2015. It was hosted by oPAC coordinator Prof. Carsten P. Welsch with support from the EU Project TEAM and joined scholars and researchers from across Europe to review the 2015 edition of this highly successful school that took place between January – March this year. Founded in 1994, JUAS delivers an academically accredited training programme in collaboration with CERN and a cluster of 15 European universities. The School comprises 2 five-week sessions on the Sciences and Physics, as well as Technologies and Applications of particle accelerators. Classes are taught by leading specialists in their fields and each session is concluded by an examination.

All 2015 lectures, student performance in the exam and their feedback on individual lectures were critically reviewed. The advisory board members commended JUAS for offering for the first time a whole series of hands-on training sessions that allowed school participants to gain expertise in ultra-high vacuum systems, superconductivity and other cutting edge technologies. School finances and current sponsorship by industry partners and research institutes were also reviewed and the school found to be in excellent shape.

Other training schemes, such as oPAC's lectures and workshops, or the Nordic Particle Accelerator School, were found to adapt the JUAS principles and help delivering high quality education to an even larger number of students. This is critical in ensuring that the future demand in trained accelerator experts can be met.

Dr. Louis Rinolfi, JUAS director, said: "JUAS' ambition is to deliver the best possible and most comprehensive education program to our students and we are extremely grateful for the commitment of our lecturers. We have received excellent feedback on the quality of the lecture program this year and will try our best to improve the school even further in the future."

"We had a very fruitful meeting in Liverpool and at the Cockcroft Institute and are grateful for the local support. Liverpool University is an important partner for JUAS and we hope that we continue to see many students from this university attend our courses in the future."

Many oPAC Fellows have benefitted from training at JUAS with Michele Carla even winning the 2013 JUAS award for the best exam. The network has supported JUAS by offering scholarships to selected student and allowing many early stage researchers to benefit from this excellent training.

EuroCirCol – A Vital Project to Strengthen Europe’s Pole Position in Particle Physics



The European Circular Energy-Frontier Collider (EuroCirCol) project started on 1st June 2015. EuroCirCol is a conceptual design study for a post-LHC research infrastructure based on an energy-frontier 100 TeV circular hadron collider. It was selected for funding within the Horizon 2020 Research and Innovation Framework Programme. With a total score of 15 out of a maximum of 15 it received the highest evaluation score of all submitted proposals.

The study will receive 3 M€ funding from the European Union. It brings together an international consortium of 16 beneficiary partner organizations including universities and research centres. EuroCirCol is coordinated by CERN and will run for 4 years. The objective of this ambitious project is to develop the conceptual design of a future energy frontier hadron collider infrastructure as an international, collaborative effort under European leadership. A new research infrastructure of such scale depends on the feasibility of key technologies pushed beyond

the current state of the art. Innovative designs for accelerator magnets to achieve high-quality fields up to 16 T and for a cryogenic beam vacuum system to cope with unprecedented synchrotron light power are amongst the many challenges that will be addressed. Advanced energy efficiency, reliability and cost effectiveness are additional key factors to build and operate such an accelerator within realistic time scale and cost.

EuroCirCol is part of the global Future Circular Collider (FCC) study, federating resources worldwide to assess the merits of different future accelerator scenarios. FCC forms the core of a globally coordinated strategy of converging activities in a very important research area, involving participants from the European Research Area and beyond.

For more information, please visit the project web site: <http://www.eurocircol.eu>



Vacancies

[Postdoctoral Research Assistant in Accelerator Physics](#)

RHUL, UK

[Post-doctoral position in Accelerator Physics](#)

LAL, France

[PhD Research Project: Investigations into Laser-electron beam Interaction in a Storage Ring](#)

The Cockcroft Institute, UK

[Insertion Device Physicist / Senior Insertion Device Physicist](#)

Diamond, UK

[Applied Physicist or Electrical Engineer](#)

CERN, Switzerland

[Beamline Scientist for the High Resolution Powder Diffraction beamline ID22](#)

European Synchrotron Radiation Facility, France

[Doctoral Fellowships in Particle Detector Research](#)

Universitat Heidelberg, Germany

[Ernest Rutherford Fellowships](#)

The Cockcroft Institute, UK

[Nuclear Fusion, Nuclear Decommissioning and High Energy Physics projects](#)

Oxford Technologies Ltd, UK

Dr David Newton (†2015)

Suddenly and unexpectedly Dr. David Newton passed away last 14th of June. He has been involved in the oPAC project since its start in 2011 and was specialized in charged particle beam dynamics, accelerator optimization and radiation sources.

Dr. Newton was primary supervisor of oPAC Fellow Ms. Emilia Cruz Alaniz, has contributed to the network's workshops and schools, and helped turn oPAC into a European "success story". He has shared his passion for

accelerators with several generations of students at the Cockcroft Institute, within oPAC, and around the world.

Dr. Newton was a key member of the oPAC family: He was an excellent scientist, a passionate lecturer, and an outstanding mentor. He was also a wonderful friend.

Words cannot describe the void that he is leaving. Our thoughts are with his partner Jo and his family in these difficult times.



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oPAC Event

Oct 7th – 9th 2015

International Conference on Accelerator Optimization,
 Seville, Spain

Events

Aug 23rd–28th 2015

FEL 2015,
 Daejeon, South Korea

Aug 31st -Sep 5th 2015

3rd Annual Large Hadron Collider Physics Conference,
 St. Petersburg, Russia

Sep 7th -11th 2015

13th International Conference on Heavy Ion Accelerator Technology,
 Yokohama, Japan

Sep 13th-17th 2015

IBIC 2015,
 Melbourne, Australia

Sep 13th –18th 2015

17th International Conference on RF Superconductivity,
 Whistler, BC Canada

Oct 5th -10th 2015

25th International Conference on Atomic Physics,
 Suzhou, China

Oct 19th -23rd 2015

15th International Conference on Accelerator and Large Experimental
 Physics Control Systems, Melbourne, Australia

NOTICE BOARD

Deadline for Submission of Abstracts to the International Conference on
 Accelerator Optimization **31st July 2015**

Deadline for Contributions to the next Newsletter **15th October 2015**

About oPAC

The optimization of the performance of any Particle ACcelerator (oPAC) is the goal of this new network within the FP7 Marie Curie Initial Training Network (ITN) scheme. oPAC aims at developing long term collaboration and links between the involved teams across sectors and disciplinary boundaries and to thus help defining improved research and training standards.

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 289485.



www.opac-project.eu

