

Welcome to the first oPAC Newsletter !

Special Interest Articles

- Meet the T.E.A.M.
- Vacancies

Many of the today's most advanced research infrastructures rely on the use of particle accelerators. This includes for example, synchrotron-based light sources and FELs, high energy accelerators for particle physics experiments, high intensity hadron accelerators for the generation of exotic beams and spallation sources, as well as much smaller accelerator facilities where cooled beams of specific particles are provided for precision experiments and fundamental studies.

Moreover, particle accelerators are very important for many commercial applications, such as medical applications, where they are used for the provision of radioactive isotopes, x-ray or particle beam therapy. Furthermore, they are widely used for material studies and treatment, lithography, or security applications, such as scanners at airports or cargo stations.

The full potential of any particle accelerator can only be exploited if the performance of all its parts are continuously optimized, if numerical tools are made available that allow for developing and improving advanced machine designs and for benchmarking modeling codes against experimental results, if methods are developed in partnership between the academic and industry sectors to monitor beams with ever higher intensities and brightness, shorter pulse lengths or smaller dimensions, and if the state-of-the-art in control and data acquisition systems is pushed further by the international research community to link all the above.

oPAC is a new European initiative that received up to 6 M€ of funding from the European Union to train 22 early stage researchers and carry out collaborative research into all the above aspects, with the aim to optimize the performance of present and future particle accelerators that lie at the heart of many research infrastructures. The network's broad research program includes design studies of LHC upgrade scenarios, R&D work for the European Spallation Source, development of advanced computational tools and methods, as well as investigations into novel beam diagnostics, such as beam halo monitors or lowest intensity current monitors.

The network brings together research centers, universities, and industry partners to jointly train the next generation of researchers in this interdisciplinary field. Thereby, oPAC also aims at developing long term collaboration and links between the international community across sectors and disciplinary boundaries and to thus help defining improved research and training standards in our research area field.

This newsletter shall be published on a quarterly basis and will keep you informed about research progress and activities across the Consortium. oPAC is a fantastic opportunity for our community and I hope that you will get involved in the network's R&D program and numerous events!



Prof. Carsten P. Welsch, Coordinator

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oPAC Kickoff Meeting

The oPAC project officially started on 1st December 2011 and a kick off meeting was held in Liverpool, UK, on February 8th-10th 2012. Over 30 participants attended the 3 day meeting where an introduction to the Marie Curie Actions rules and regulations,

project finances and reporting was given to all partners. The network's recruitment strategy, election of the Steering Committee and future training events were all on the busy agenda.



In addition, all research projects that will be realized within oPAC were presented by the scientists in charge and discussed with all consortium members. This helped to ensure that all appointed fellows will receive the best possible training whilst working within the network and that synergies can be efficiently

exploited. These discussions included the definition of individual career development plans that will be signed between each fellow and their supervisor(s) at the start of their project.

Full Partners



Associated Partners



Full information on all partners and projects can be found on the [oPAC](#) web site.

Project Management

The day-to-day project management of oPAC will be carried out by the University of Liverpool through the EU Project T.E.A.M. (*Training, Enterprise, Administration and Management*) which is based at the Cockcroft Institute for Accelerator Science and Technology in Daresbury, UK.

The T.E.A.M. consists of two project managers; Glenda Wall (oPAC) and Dr. Rob Ashworth (LA³NET) and Sue Davies, the finance administrator, who will be in charge of all financial aspects relating to oPAC. The

Glenda Wall has been Project Manager for oPAC since June 2012. Glenda's previous experience includes Project Manager of the Marie Curie Initial Training Network – DITANET, on which she worked between September 2009 and May 2012.

Sue Davies has a background in teaching and learning and as a senior researcher at the University of Liverpool became involved in coordinating EU funded research projects. She is in charge of the Finance Administration of oPAC.

Helen Williams worked within a communications and marketing environment where she has effectively managed a variety of staff and public events and taken the lead in successful social marketing campaigns. Helen was recruited as EU Project Assistant in March 2012 to provide administrative support.

Alexandra Welsch joined the EU Project T.E.A.M. in December 2011 and is now responsible for the development and administration of the oPAC websites and the creation and distribution of the project newsletters.

project administrator, Helen Williams, provides support to the projects via the coordinator and Alexandra Welsch is responsible for developing and managing the websites and newsletters.

Through the management of DITANET, oPAC and LA³NET, the T.E.A.M. has built up considerable experience in EU projects and will assist partners and fellows in all aspects of project execution.



Sharing of News

Researchers in the field of accelerator science are encouraged to provide input to our newsletter. Please benefit from the links across the consortium to announce recent R&D results at your institution, or upcoming events via this newsletter, our web site and Facebook group. Please email any news to Glenda Wall.

oPAC Leadership - The Steering Committee

The Steering Committee (SC) is a small body of senior scientists chaired by the Network Coordinator and supported by the Management Office. It is responsible for the Network's strategy and makes all decisions concerning the network whilst monitoring the progress of activities. The SC meets at least every six months.



Prof. Grahame Blair is from Royal Holloway, University of London and head of the Centre of Particle Physics there, which includes the John Adams Institute for Accelerator Science. His interests include beam diagnostics at ATF2 at KEK, CTF3 at CERN, and PETRAIII at DESY and he is currently exploring possibilities for involvement in the beam diagnostics of Linac4 at CERN.



Prof. Joaquin Gomez Camacho represents the University of Seville and is the Director of the Centro Nacional de Aceleradores (CNA), a research facility which contains three accelerators, where a variety of beam analysis techniques are developed. He has participated in experiments performed at different nuclear physics facilities; Louvain la Neuve in Belgium, ISOLDE at CERN, GSI in Germany and TRIUMF in Canada.



Prof. Erich Griesmayer is founder and CEO of CIVIDEC Instrumentation. The company was born by the end of 2009. His professional background is in electronic measurement technology with a focus on diamond detectors and fast electronics. During his 20+ years of working at CERN he collected broad knowledge and experience in accelerator technology and is member of the n_TOF experiment and of the RD42 collaboration.



Dr. Andreas Jansson leads European Spallation Source AB and has worked on the development of various diagnostics devices. Since 2010 Andreas has led the Beam Diagnostics Group at the European Spallation Source in Lund, Sweden.



Dr. Rhodri Jones is head of the CERN Beam Instrumentation Group at the European Organization for Nuclear Research (CERN), responsible for the beam instrumentation and diagnostics on all CERN accelerators and transfer lines. His interests include high frequency RF diagnostics, laser and electro-optical diagnostics and new, innovative techniques applicable to beam measurement systems.



Dr. Nika Vodopivec works for Instrumentation Technologies, Solkan, Slovenia and became Head of HR and General Affairs in September 2009. She is responsible for the realisation of an integrated human resources management system and the management and general affairs coordinating work on the implementation of co-financed projects.



Prof. Carsten P. Welsch is a Full Professor in the physics department of the University of Liverpool and Associate Director at the Cockcroft Institute, from where he coordinates the oPAC Network. His research covers low energy storage rings, beam instrumentation and laser applications.

New to the Network - First Fellows join oPAC

Of the 22 vacancies within oPAC for Early Stage Researchers, 12 Fellows have now been recruited; four of them have already commenced their contracts.

Meghan McAteer grew up in Austin, Texas and earned Bachelor's degrees in Studio Art and in Physics from the University of Texas at Austin. She developed an interest in accelerator physics as an undergraduate, when she attended the first of many courses at the U.S. Particle Accelerator School and spent a summer at Fermi National Accelerator Laboratory working on commissioning instrumentation upgrades in the Fermilab Booster accelerator.

After qualifying for PhD candidacy at the University of Texas, she was admitted to the Joint University-Fermilab Doctoral Program in Accelerator Physics and Technology and relocated to Fermilab to conduct research for her thesis. Her research at Fermilab focused on measuring and correcting optics distortions in the Booster accelerator to help control losses and provide the increased total proton throughput that will be necessary for

Fermilab's planned high-intensity experimental program. She has presented her work at two international accelerator physics conferences.

Meghan has taught undergraduate physics classes for science majors and an innovative, interactive class aimed at providing a solid understanding of physics concepts to undergraduates who are studying to become elementary school teachers. She also taught an introductory class in accelerator physics at the U.S. Particle Accelerator School.

Continuing her thesis research as a Marie Curie oPAC fellow, Meghan is working in the Accelerator and Beam Physics group at CERN. Her research will focus on measuring and correcting resonances in the PS Booster as part of a project to increase intensity in the LHC injector chain.



Michał Jarosz was born in September 1987 in Warsaw, Poland (the birth-place of Marie Skłodowska-Curie), where he lived until graduating in 2012. He studied Electronics and Informatics in Medicine at the Warsaw University of Technology where he obtained his Bachelor's and Master's degree.

While still studying, he joined the Polish-Swedish cooperation programme for the future ESS, the European Spallation Source. During this cooperation he worked at CERN, Geneva as a trainee in the Linac4 project, the future injector for the LHC. He created a bead-pull RF measurement system for the project, which together with analysis of the data, became his Bachelor's degree thesis in June 2010.

His next task within the cooperation consisted of solving radiation protection issues for the ESS proton accelerator's tunnel. The

summers of 2010 and 2011 were spent in Lund, Sweden, using simulation tools such as FLUKA. During this time he produced and analysed data which provided answers to questions concerning the future accelerator's tunnel layout. Based on this research, he wrote his Master's thesis, which was successfully defended in March 2012.

In addition to studying, he was working at the National Centre for Nuclear Studies in Świerk, Poland, where he took part in some smaller accelerator projects for medicine and industry.

Currently Michał works at ESS, Lund as a Marie Curie Fellow within the oPAC project. His work concerns the simulation of beam loss patterns in the ESS accelerator.



Manuel Cargnelutti was born in Tolmezzo, Italy in March 1987. After getting his secondary school diploma, he moved to Udine (IT) to study Electronic Engineering at the *Universita' degli studi di Udine*. At the end of the third year he had the opportunity to undertake a five month internship with STMicroelectronics, which allowed him to approach the world of multimedia data processing. He worked on the development of a new algorithm for error concealment in the video transmission. He obtained his Bachelor's degree in November 2009.

Manuel continued studying for a Master's degree in Electronic Engineering with specialization in Microelectronics, graduating in March 2012. During this time he moved his interests towards software development and



integration, algorithm parallelization and databases. For his Master's degree thesis, he undertook another seven month internship with STMicroelectronics. This project is centered on the integration of support for a new streaming standard inside the Android OS.

Currently Manuel is involved in the oPAC project as a Marie Curie Fellow recruited as a Software Development Engineer within Instrumentation Technologies in Solkan (SLO). His work will focus on the design and development of common applications for measure instruments in different particle accelerators.



Blaine Lomborg studied at the University of the Western Cape in RSA from 2005, where in his 3rd year he participated in astronomy and astrophysics research to complete his Bachelor's degree. Thereafter, he went on to study nuclear physics in 2009. In 2010, Blaine joined the Accelerator Group at iThemba LABS where he worked within the field of ion source physics undertaking a Master's degree, focusing on a diagnostic device for beam quality measurements. His thesis title was 'Studies of an emittance measurement device for beam quality optimization of ion sources'.

During the summer of 2010, he was a student at CERN working on the Linac3 accelerator's GTS-LHC ECR ion source with studies developing a *LabView* CSD application, to investigate the charge-state-distribution of a lead ion beam. The CERN Summer School



helped him discover special interests in accelerator physics and the desire to pursue a PhD.

Blaine joined oPAC as a Marie Curie Fellow in September 2012 and is based at the Cockcroft Institute in Daresbury, UK. His work focuses on the development of a beam monitor for halo propagation mechanisms. Blaine is developing a new code that combines known halo formation processes into one single halo generator, using the resulting beam distribution for particle tracking through different facilities, such as; CTF3, the ESS Linac or part of the FAIR complex



First Meeting of the oPAC Steering Committee

The first meeting of the Steering Committee took place on 11th July by video conference and successfully reviewed the progress of the Network to date. Recruitment of Fellows was discussed and the positions offered, so far, from the 22 vacancies available. The recruitment process is ongoing and the latest deadline for applicants is 30th September 2012. Details of all vacancies are available from the oPAC web site.

liv.ac.uk/opac/vacancies/open_positions

Two future events were confirmed, in October 2012 the 1st oPAC School will take place in the form of the CERN Accelerator School and those fellows already recruited to the network will attend as part of their initial training.

A further training event, on complementary skills, will be provided to all Fellows and will take place at the University of Liverpool in June 2013.

Also, the Network's Topical Workshop series was discussed in detail and workshops on 'Beam Physics', 'Beam Instrumentation' and 'Simulation Tools' shall all be organized in the first half of 2013. These typically take place over two days and include talks from experts in each particular field in addition to providing training to the oPAC Fellows.

Watch the oPAC web site and future newsletter editions for further details on all events!

oPAC on the international stage at IPAC12

In May 2012 the oPAC project was presented at the IPAC Conference in New Orleans, USA. The stand was hosted by the DITANET Project and members of the EU Project T.E.A.M.

Through the DITANET Project, which was completed at the end of May 2012, T.E.A.M. members were able to promote oPAC, publicizing the vacancies within the Network and highlighting the work of Marie Curie Initial Training Networks as a whole. The success of the DITANET Project provided insight into the importance of these networks and the outcomes achievable.

Taking part in this international event provided many opportunities for the T.E.A.M. members to meet current and prospective Partners in addition to disseminating the Network at an international level.

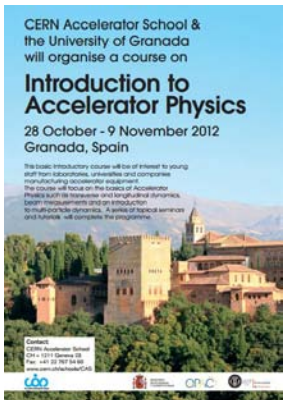


Project Stand at IPAC 12



oPAC Training Events

CERN Accelerator School



The **CERN Accelerator School: Introduction to Accelerator Physics** will be held in Granada, Spain 28th October to 9th November 2012. All newly recruited Marie Curie Fellows within the project have been registered for this event.

This introductory course will be of interest to young staff from laboratories, universities and companies manufacturing accelerator equipment.

It will focus on the basics of Accelerator

Physics, such as transverse and longitudinal beam dynamics, beam measurements and an introduction to multi-particle beam simulation studies. A series of topical seminars and tutorials will complete the program.

The CERN Accelerator School ([CAS](#)) is an internationally renowned school and will be hosted on this occasion by the [University of Granada](#).

oPAC School on Complementary Skills

A week-long School providing complementary skills training for all oPAC Fellows will be held at the University of Liverpool, UK. The School will cover areas such as project management, presentation skills, intellectual property rights and scientific writing. It will also allow for networking between the Fellows and has been designed to enhance training within oPAC.

The School will take place at the Graduate School suite between 3rd – 7th June 2013 and will be mandatory event for all oPAC trainees. The program was designed in close collaboration between the oPAC SC, Liverpool University's graduate school and external trainers.

Further information and registration details will be announced in due course.



Vacancies in the Network

There are some last posts available in oPAC. So, if anyone is aware of possible candidates we would be grateful if you could alert them to these opportunities.

Also, if you are able to publicise these vacancies at your organisation you will find full details at:

liv.ac.uk/opac/vacancies/open_positions



Other Vacancies

PDRA position in Accelerator Physics at the Cockcroft Institute / University of Liverpool, UK

The Cockcroft Institute is a unique collaboration between academia, national laboratories and industry with the goal of bringing together the best accelerator scientists, engineers, educators and industrialists to conceive, design, construct and use innovative instruments of discovery and lead the UKs participation in flagship international experiments. The Institute has been heavily involved in the design, commissioning and operation of the UKs first Free Electron Laser (FEL) on the ALICE accelerator test facility and is proposing to develop an advanced FEL test facility (CLARA), superseding the ALICE facility, to enable the UK to contribute to the ongoing development of worldwide FEL facilities.

You will contribute to the ongoing development of CLARA by investigating novel concepts for the generation of ultra-short FEL pulses at CLARA as well as other aspects of

FEL development contributing to the next generation of FEL facilities. You will also have the opportunity to take part in experiments aimed at optimizing and enhancing the ALICE FEL performance. The post will require close collaboration with Cockcroft Institute members in ASTEC and other universities.

You will have a PhD in Physics or closely related discipline and a proven background in accelerator physics or a related field. Experience in modeling and optimizing FEL design parameters, mathematical modeling or a strong beam dynamics background would be advantageous. The post is available for two years (with the possibility of a one year extension). Please send informal enquiries to [Dr David Newton](#). An application form can be found at :

www.liv.ac.uk/working/job_vacancies/research/R-580312.htm



Marie Curie ITN fellowship at STFC Daresbury Laboratory, UK

The next generation of accelerators, both light source and particle physics linear colliders, require unprecedented stability and precision in the timing systems, with clocks with few femtosecond stability. The leading technological to providing such stability is based on mode locked laser optical clocks, and actively length stabilised optical fibre distribution. The requirement of ~1 femtosecond stability on distributed RF timing signals over distances of >100metres requires an in-depth knowledge and understanding of the physics of the of the optical transport and detection processes. This project will focus on the distribution systems, examining the physics of sources optical timing error which are encountered in accelerator environments, and the fundamental limitations arising from

distribution optical physics. The project will also seek to develop optical beam arrival monitors based on the distribution systems and with femtosecond level capability. The project will be a mixture of theoretical and experimental activities, requiring the fellow to understand linear and non-linear optics and the physics of mode-locked lasers and to apply this understanding to practical experimental tests.

The successful candidate will be based at STFC Daresbury National Laboratory. The option to be enrolled for a PhD at the near-by University of Manchester exists.

For further details or a flyer to advertise the position please contact [Dr Steve Jamison](#).



oPAC Events

October 28 th – November 9 th 2012	1 st oPAC School on Accelerator Science / CERN Accelerator School, Granada, Spain
December 10 th 2012	2 nd Meeting of the oPAC Steering Committee Brussels, Belgium
June 3 rd – 7 th 2013	2 nd oPAC School on Complementary Skills, Liverpool, UK

Other Events

7 th January – 15 th March 2013	Joint Universities Accelerator School 2013 - Physics and Technology of Particle Accelerators , Archamps, France
13 th – 17 th May 2013	International Particle Accelerator Conference , Shanghai, China
21 st -25 th September 2013	International Beam Instrumentation Conference ,Oxford, UK

NOTICE BOARD

DEADLINE FOR NEXT RECRUITMENT ROUND
30th September 2012

DEADLINE FOR CONTRIBUTIONS TO THE NEXT NEWSLETTER
30th November 2012

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.

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