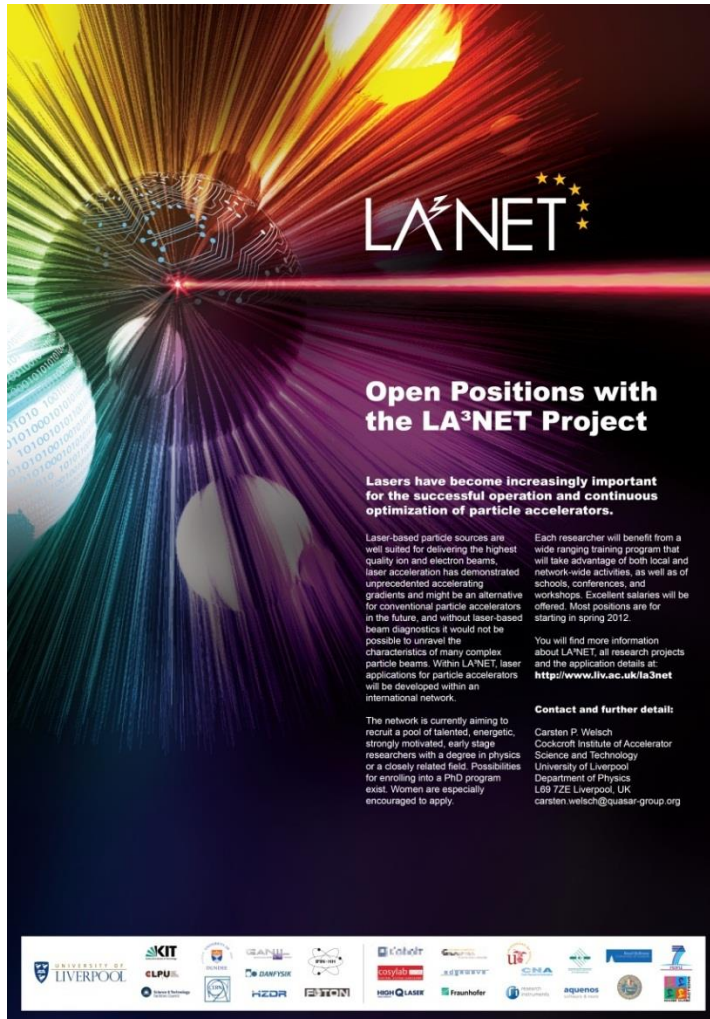




WELCOME !
to this LA³NET Workshop
Carsten P. Welsch

■ Laser Applications for Accelerators – A Marie Curie Network

- 19 ESRs
- 36 Partner Institutions
- 4.6 M€

LA³NET

Open Positions with the LA³NET Project

Lasers have become increasingly important for the successful operation and continuous optimization of particle accelerators.


Laser-based particle sources are well suited for delivering the highest quality ion and electron beams, and laser acceleration has demonstrated unprecedented accelerating gradients and might be an alternative for conventional particle accelerators in the future, and without laser-based beam diagnostics it would not be possible to unravel the characteristics of many complex particle beams. Within LA³NET, laser applications for particle accelerators will be developed within an international network.

The network is currently aiming to recruit a pool of talented, energetic, strongly motivated, early stage researchers with a degree in physics or a closely related field. Possibilities for enrolling into a PhD program exist. Women are especially encouraged to apply.

Each researcher will benefit from a wide ranging training program that will take advantage of both local and network-wide activities, as well as of schools, conferences, and workshops. Excellent salaries will be offered. Most positions are for starting in spring 2012.

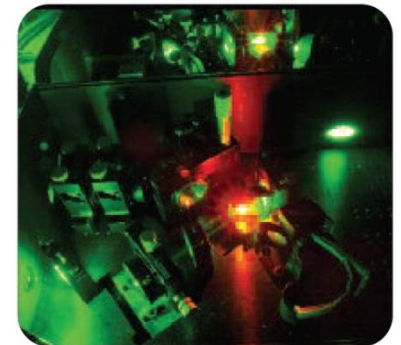
You will find more information about LA³NET, all research projects and the application details at <http://www.liv.ac.uk/la3net>

Contact and further details:
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LAser Applications at Accelerators a european NETwork

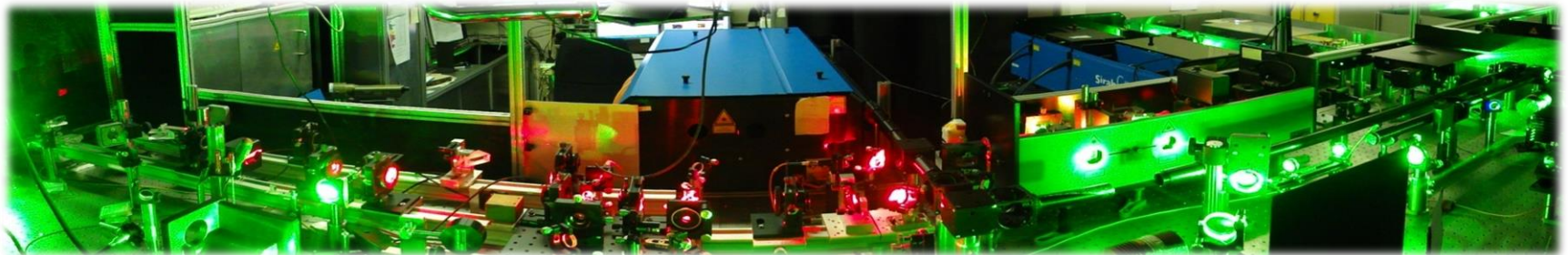
- More than 30,000 accelerators in the world;
- Lasers are becoming increasingly important
 - Beam generation;
 - Acceleration;
 - Characterization, etc.
- Few experts trained in both fields;
- Large scale facilities: International collaboration is key !



Research Program

■ Main areas:

- Particle Sources (WP2);
- Particle Beam Acceleration Schemes (WP3);
- Beam Diagnostics (WP4);
- System Integration (WP5);
- Laser and Photon Detector Technology (WP6).



A unique training program



LA³NET Web Site



LA³NET

- LA³NET
 - About us
 - LA³NET Brochure
 - Network Structure
 - Projects
 - LA³NET Prize
 - Vacancies
 - News
 - Events
 - Symposium
 - Dissemination
 - Press
 - Links
 - Downloads
 - EU Project T.E.A.M.
 - Contact
- Part of the School of Physical Sciences



Research and development of laser-based applications for accelerators

19 early-stage researchers working on dedicated projects.

[Find out more](#)

Welcome to LA³NET



Our work focusses on the exploitation of lasers for applications at accelerator facilities for ion beam generation, acceleration and diagnostics. LA³NET is part of the FP7 Marie Curie Initial Training Network (ITN) scheme.



Our Network

LA³NET brings together research centres, universities and industry partners from across Europe in a unique network.

[Find out more](#)

News

LA³NET results in NIMA – selection of abstracts III

European Commission launches a pilot service to boost exploitation of research results

(<http://www.la3net.eu>)




Like us.

www.facebook.com/TheCockcroftInstitute

Outreach & sharing best practice

ESOF
2014
COPENHAGEN
EUROSCIENCE
OPEN
FORUM

- **Complementary skills training**
 - Communication, project management, IPR
- **Administrator training**
- **HEA seminar, Teaching & Learning**

Public engagement

- Fairs & conferences
- Project videos
- **Symposium on Accelerators & Lasers for Science and Society, Liverpool Convention Centre, 26 June 2015**



International Partnership





Accelerators & Lasers

Drivers of Innovation

Prof. Carsten P. Welsch

Where do we want/need to go ?



- EU capacity: infrastructure and human ,capital‘

Grand Challenges

- oPAC Workshop @ CERN
- IndicoID: 243 336




Grand Challenges in Accelerator Optimisation

CERN, Switzerland: 26th/27th June 2013

Speakers include

- Green and Compact Magnet Technology for Optimisation of Particle Accelerators
Dr. Glenn Rogier Heston, CEO, CERN
- Challenges of High Intensity Accelerators
Dr. Mala Livshits, Head of Accelerator Division, ESS
- Research on Ultra-short Timescales – FELs
Dr. Daniel Richter, SLAC
- Laser Acceleration – Towards Highest Gradients
Prof. Luka Rossi, Director, CLPU
- Unravelling the Secrets of the Universe
Dr. Richard Hawkins, CERN

Accelerators are key instruments for fundamental research, health and industry applications. International collaboration is very important for their continued optimisation.

This two-day international workshop will provide an overview of the current state of the art in beam physics, numerical simulations and beam instrumentation and highlight existing limitations. It will discuss research and development being undertaken and ambitions to further improve the performance of existing and future facilities.

In addition to invited talks, there will be industry displays and a special seminar covering recent LHC discoveries. All participants will have an opportunity to contribute a poster.

This event is open to all and free of charge. Advance registration is required; places are strictly limited.

Full details and registration:
www.opac-project.eu

Contact:
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Medical Accelerators



- (online) beam monitors
- Improved calorimeters and Si detectors



- Enhanced Monte Carlo codes (FLUKA)
- Systematic studies into e.g. ion effects



- Common software bus
- Improved beam delivery schemes

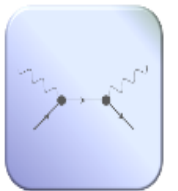
Antimatter Facilities



- Better facility design
- New beam handling techniques



- Online diagnostics
- Improved detectors



- Experiments: Novel cooling schemes
- Spectroscopy on antihydrogen.

Way to go: Novel Accelerators

- Dielectric Laser Accelerators
- Particle-driven laser plasma acceleration
- Laser plasma acceleration

...all require improved simulation studies, better understanding of beam/field/plasma interaction and a coordinated R&D effort. **We will plan this tomorrow !**

Summary

- LA³NET was a world-wide unique training that has produced excellent R&D results and many publications
- 19 Fellows successfully trained
- Role model: Enhanced training program to improve career perspectives
- A number of large-scale accelerator and laser projects are in the planning – but where are the experts !?

Many more initiatives are urgently required !