

Network-based training through LA³NET

Advanced School on Laser Applications at Accelerators
CLPU, Salamanca, Spain
29 September -3 October 2014

Rob Ashworth



Outline

Aspiration for training

FP7 Marie Curie Initial Training Network (ITN)

LA³NET

Summary comment

Principles for Innovative Doctoral Training

- 1. Researcher excellence
- 2. Attractive institutional environment
- 3. Interdisciplinary research options
- 4. Exposure to industry & other relevant employment sectors
- 5. International networking
- 6. Transferable skills training
- 7. Quality assurance

Extract from "Report of Mapping Exercise on Doctoral Training in Europe "Towards a common approach" of 27 June 2011(final), adopted by the ERA Steering Group on Human Resources and Mobility.

http://ec.europa.eu/euraxess/pdf/research_policies/Report_of_Mapping_Exercise_on_Doctoral_Training_FINAL.pdf

FP7 Marie Curie Initial Training Network (ITN)

- FP7 funding European collaborative research
- Marie Curie Actions for **researcher training & mobility**
- ITN: project-based training within a network
- LA³NET: laser applications for particle accelerators



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

1. Researcher excellence

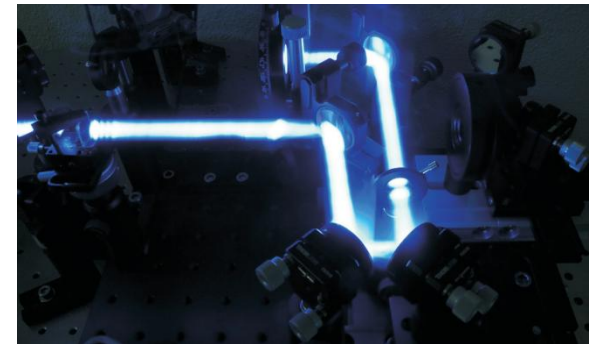
- Training programme funded for 17 ESRs
 - 36 month projects: PhD
 - Secondments across network
 - Training events
 - Currently 19 ESRs including 12 month contracts

2. Attractive institutional environment

- Universities, HEIs
 - Liverpool, Dundee, Karshure Institute of Technology
- National & International Research Centres
 - CERN, CLPU, HZDR, IFIN-HH, GANIL, STFC
- Industry
 - Danfysik, Foton

3. Interdisciplinary research options

- Accelerator and laser communities
 - Scientists & engineers across modelling, material science, thermo-dynamics, optics, electro-magnetism, mechanics, electronics, nuclear physics...
- Laser applications for:
 - **WP2 Particle sources**
 - **WP3 Particle beam acceleration**
 - **WP4 Beam diagnostics**
- **WP5 System integration**
- **WP6 Laser & photon detector technology**



Photograph of lab setup at CLPU, Spain. Image courtesy of E. Jarque.

4. Exposure to industry & other relevant employment sectors



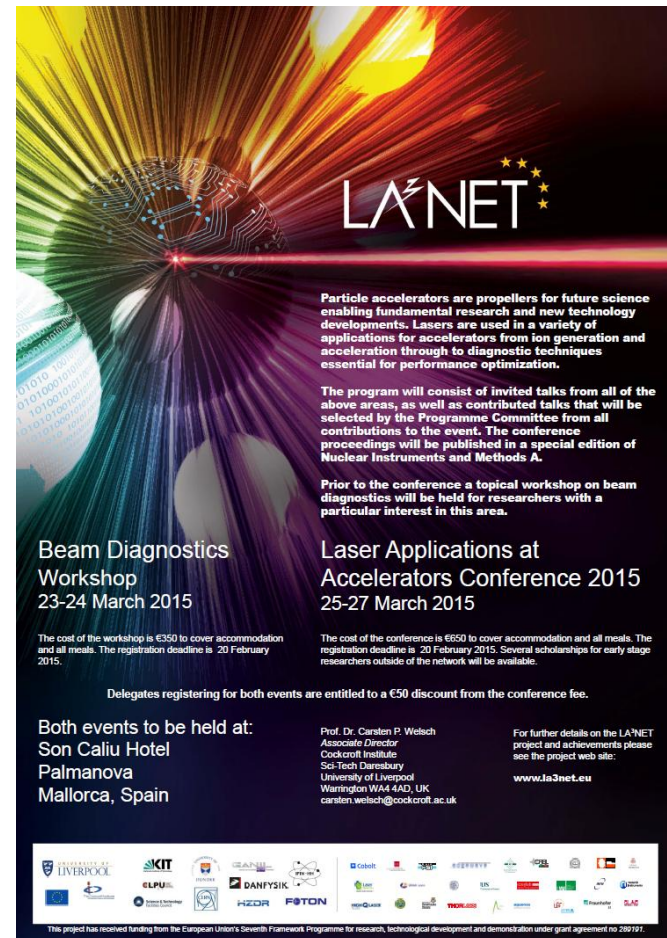
5. International networking

- Secondments across network
- Annual schools on laser applications and complementary skills
- Topical workshops
 - Particle sources at CERN, Switzerland
 - Laser technology & optics design at ILT, Germany
 - Acceleration techniques at HZDR, Germany
 - **Scientists Go Industry: Laser & Accelerator Physics**
 - **Knowledge transfer & spin-offs with Research Instruments**
 - **Beam diagnostics with STFC**
- International conference



LA³NET International Conference 2015

- Open to external delegates
- Invited speakers & contributed talks
- Results from LA³NET
- Beam diagnostics workshop
 - 23-24 March 2015

LA³NET

Particle accelerators are propellers for future science enabling fundamental research and new technology developments. Lasers are used in a variety of applications for accelerators from ion generation and acceleration through to diagnostic techniques essential for performance optimization.

The program will consist of invited talks from all of the above areas, as well as contributed talks that will be selected by the Programme Committee from all contributions to the event. The conference proceedings will be published in a special edition of Nuclear Instruments and Methods A.

Prior to the conference a topical workshop on beam diagnostics will be held for researchers with a particular interest in this area.

Beam Diagnostics Workshop
23-24 March 2015

The cost of the workshop is €350 to cover accommodation and all meals. The registration deadline is 20 February 2015.

Laser Applications at Accelerators Conference 2015
25-27 March 2015


The cost of the conference is €650 to cover accommodation and all meals. The registration deadline is 20 February 2015. Several scholarships for early stage researchers outside of the network will be available.

Delegates registering for both events are entitled to a €50 discount from the conference fee.

Both events to be held at:
Son Caliu Hotel
Palmanova
Mallorca, Spain

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For further details on the LA³NET project and achievements please see the project web site:
www.la3net.eu



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6. Transferable skills training

ESOF
2014
COPENHAGEN
EUROSCIENCE
OPEN
FORUM



- Complementary skills schools
 - Communication
 - Project management
 - Intellectual property
 - Career pathway

■ Outreach

- Conferences
- Webcast
- Local schools
- Symposium on Accelerators & lasers for science and society, Liverpool Convention Centre. 26 June 2015



Transferable skills training

- **Scientists Go Industry: Laser & Accelerator Physics**
17-18 November 2014, Berlin
 - Bring together corporate/industry & early stage researchers
 - Talks, discussions & career guide

Speaker	Organisation
Prof. Carsten Welsch	LA ³ NET
Dr. Stefan Seliger	Roche
Dr. Wolfgang Stockhausen	Management Consulting
Dr. Stefan Kneip	Siemens
Dr. Dan Crick	The Technology Partnership
Dr. Vincent Reillon	The Science Europe Office
Dr. Elliot Davies	Wynne Jones
Dr. Michael Budde	Danfysik
Dr. Stephen Lee	Thales
Hanspeter Vogel	Research Instruments
Dr. Bernd Steffen	DESY
Nina Löchte	Helmholtz Association
Dr. Francois Sylla	SourceLAB



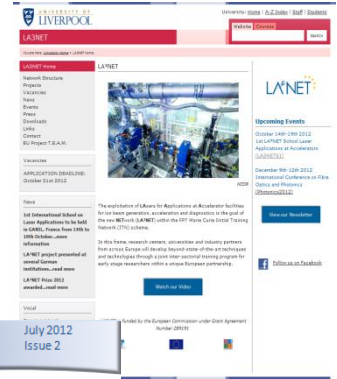
7. Quality Assurance

- Recognised training by hosts institutes
- Reporting to EC & mid-term review
- Fellow questionnaires
- Event feedback forms



Becoming a professional

- PhD is not enough
- Complementary skills training
- International mobility
- Cross-sector exposure
- Employability - visibility



July 2012 Issue 2

Very busy start phase for the LA³NET project

Special Interest Articles

- Announcement of LA³NET Prize Winner
- First School in Laser Applications at Accelerators

Abstract

Lasers have become increasingly important for the successful operation and optimisation of particle accelerators. For beam diagnostics lasers provide the highest time and spatial resolution for measurement and longitudinal beam profile measurements. They also provide the means of directly observing a particle beam with high dynamic range and permit measurement of very complex beam distributions. As the most widely used diagnostic tool for the beam, the LA³NET project has been set up to coordinate the efforts of the community in the development of laser-based diagnostic systems for accelerators. The focus of the LA³NET project is to coordinate the efforts of the community in the development of laser-based diagnostic systems for accelerators. The focus of the LA³NET project is to coordinate the efforts of the community in the development of laser-based diagnostic systems for accelerators.

Research

Diagnostic systems are essential components of any accelerator. They are used to monitor the performance of the accelerator and to provide feedback for optimisation. The development of laser-based diagnostic systems for accelerators is a rapidly growing field of research. The LA³NET project is a major international effort to coordinate the efforts of the community in the development of laser-based diagnostic systems for accelerators.

Training

Training of all fellows will mostly be through research on dedicated individual projects related to the respective field, combined with specific workshops for the partners for specialised techniques and on-site or experience. In addition, the LA³NET consortium will also organise a number of research workshops that will be open to the wider scientific community.

High Resolution Longitudinal Beam Profile Measurements

The network will organise a series of Topical Workshops that will also be open to the general public. A typical workshop will bring together 20-30 experts and will last 2 days. This includes:

- LA³NET Topical Workshop
- Particle Source: CERN, December 2013
- LA³NET Topical Workshop
- Laser Technology & Cavity Design: SL, Germany, June 2013
- Laser Application: HZDR, Germany, March 2014
- LA³NET Topical Workshop
- LA³NET Topical Workshop
- LA³NET Topical Workshop
- Beam Diagnostics: Cockcroft Institute, UK, December 2014

ESOF 2014 COPENHAGEN EUROSOURCE OPEN FORUM

LA³NET - AN INTERNATIONAL NETWORK ON LASER APPLICATIONS AT ACCELERATORS
C. B. WOOD, Cockcroft Institute and The University of Liverpool, UK
on behalf of the LA³NET Consortium

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RESEARCH PROGRAM

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INTRODUCTION

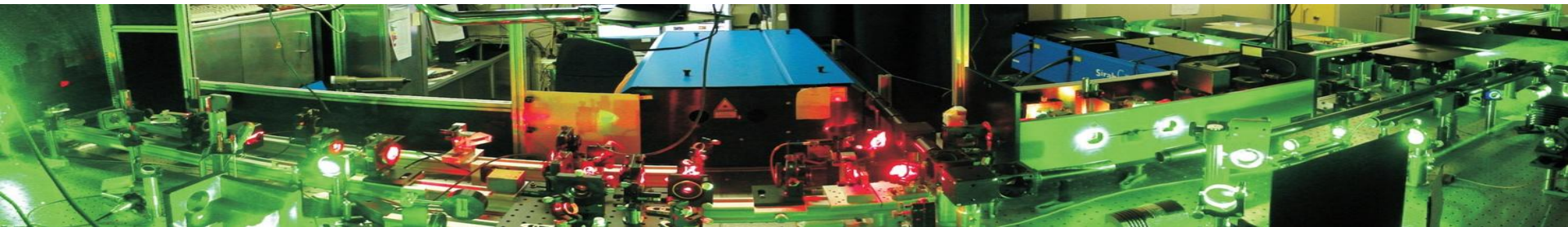
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Further information

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Panorama photograph of the RILIS setup at CERN (image courtesy V. Fedosseev).