

**E**

**2010**

**W**

**O**

**F**

**S**

**FIRST CALL FOR PAPERS**

SUBMISSION DEADLINE - 31st MARCH 2010



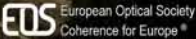
**EUROPEAN WORKSHOP  
ON OPTICAL FIBRE SENSORS**  
PORTO 08 - 10 SEPTEMBER 2010

[WWW.EWOF.S.ORG](http://WWW.EWOF.S.ORG)

E 2010  
W O F  
S



TECHNICAL COOPERATING ORGANIZATIONS



# WORKSHOP OVERVIEW

## ↓ IMPORTANT DATES

CALL FOR PAPERS

**1st NOVEMBER 2009**

PAPER SUBMISSION DEADLINE

**31st MARCH 2010**

AUTHOR NOTIFICATION SENT

**30th APRIL 2010**

PROGRAM AVAILABLE

**31st MAY 2010**

PRE-REGISTRATION DEADLINE

**30th JUNE 2009**

WORKSHOP DATE

**8-10th SEPTEMBER 2010**

Following the successful editions in Peebles (1998), Santander (2004) and Napoli (2007) we at Porto have the privilege to organise the fourth edition of the European Workshop on Optical Fibre Sensors, EWOFs'2010. This initiative aims at promoting a scientific meeting with a high level of interaction between participants, enabling an open debate and the assessment of new concepts, technologies and applications in the domain of optical fibre sensors, as well as the establishment of new collaborations and networks.

EWOFs'2010 also intends to complement in time and geographical location the international conferences in this area, particularly the International Conference on Optical Fibre Sensors (OFS).

EWOFs'2010 will take place a decade after the beginning of this new century, of this new millennium.

Mankind is currently facing great challenges in the search for a future characterised by global justice, fair and sustainable progress as well as economic and social wealth. This is a demanding, yet necessary purpose, and Science and Technology create opportunities so that Society may evolve in that sense. In its specific domain, EWOFs'2010 should encourage scientific and technological advances, and provide a forum where young and experienced researchers and entrepreneurs may interact in a mutually profitable relationship that is oriented to the development of optical fibre sensors and its positive impact on the Society. Pursuing this central objective, we commit ourselves to do our best to create the proper atmosphere. Therefore, we would like to invite you to participate in this meeting that will take place in the metropolitan area of Porto, Portugal, in September 2010.

# WORKSHOP CHAIRS, COMMITTEES

---

## GENERAL CHAIR

**PROF JOSÉ LUÍS SANTOS**

UNIVERSITY OF PORTO, PORTUGAL

---

## TECHNICAL PROGRAMME CHAIRS

**PROF BRIAN CULSHAW**

UNIVERSITY OF STRATHCLYDE, UK

---

**PROF JOSÉ MIGUEL LÓPEZ-HIGUERA**

UNIVERSITY OF CANTABRIA, SPAIN

---

**PROF BILL MACPHERSON**

UNIVERSITY OF HERIOT-WATT, UK

---

## INTERNATIONAL ADVISORY COMMITTEE

**DR ALEXIS MENDEZ**

MCH ENGINEERING, USA

---

**DR ANNA GRAZIA MIGNANI**

IFAC-CNR, ITALY

---

**DR ROBERT LIEBERMAN**

INTELLIGENT OPTICAL SYSTEMS INC., USA

---

**PROF BISHNU PAL**

INDIAN INSTITUTE OF TECHNOLOGY DELHI, INDIA

---

**PROF BYOUNG YOON KIM**

KOREA ADVANCED INSTITUTE

OF SCIENCE&TECHNOLOGY, KOREA

---

**PROF DAVID SAMPSON**

UNIVERSITY OF WESTERN AUSTRALIA, AUSTRALIA

---

**PROF FERNANDO MENDOZA**

CENTRO DE INVESTIGACIONES EN OPTICA, MEXICO

---

**PROF HYPOLITO JOSÉ KALINOWSKI**

FEDERAL UNIVERSITY OF TECHNOLOGY, BRAZIL

---

**PROF IAN BENNION**

ASTON UNIVERSITY, UK

---

**PROF KAZUO HOTATE**

UNIVERSITY OF TOKYO, JAPAN

---

**PROF JIRI HOMOLA**

INSTITUTE OF PHOTONICS AND ELECTRONICS,

CZECH REPUBLIC

---

**PROF MOSHE TUR**

TEL-AVIV UNIVERSITY, ISRAEL

---

**PROF RAMAN KASHYAP**

ECOLE POLYTECHNIQUE DE MONTREAL, CANADA

---

**PROF YANBIAO LIAO**

TSINGHUA UNIVERSITY, CHINA

---

**PROF KARSTEN ROTTWITT** (OSA Representative)

TECHNICAL UNIVERSITY OF DENMARK, DENMARK

---

## TECHNICAL COMMITTEE

**PROF ADOLFO COBO GARCÍA**

UNIVERSITY OF CANTABRIA, SPAIN

---

**PROF ANDERS BJARKLEV**

TECHNICAL UNIVERSITY OF DENMARK, DENMARK

---

**PROF ANTÓNIO LOBO RIBEIRO**

UNIVERSITY FERNANDO PESSOA, PORTUGAL

---

**PROF ANDREA CUSANO**

UNIVERSITY OF SANNIO-BENAVENTO, ITALY

---

**DR AVISHAY EYAL**

TEL-AVIV UNIVERSITY, ISRAEL

---

**DR DANIELE INAUDI**

SMARTEC, SWITZERLAND

---

**PROF DOMINIQUE PAGNOUX**

UNIVERSITY OF LIMOGES, FRANCE

---

**PROF ELFED LEWIS**

UNIVERSITY OF LIMERICK, IRELAND

---

**DR FRANCESCO BALDINI**

IFAC-CNR, ITALY

---

**PROF GEORGE STEWART**

UNIVERSITY OF STRATHCLYDE, UK

---

**PROF GUILLERMO ORELLANA**

MADRID COMPLUTENSE UNIVERSITY, SPAIN

---

**PROF HUGO THIENPONT**

VRIJE UNIVERSITEIT BRUSSEL, BELGIUM

---

**DR KATERINA KREBBER**

BAM FEDERAL INSTITUTE FOR MATERIALS

RESEARCH AND TESTING, GERMANY

---



# AND TECHNICAL COOPERATING ORGANIZATIONS

---

**PROF JAN RAYSS**

UNIVERSITY MARIE CURIE-SKLODOWSKA, POLAND

---

**PROF JULIAN JONES**

UNIVERSITY OF HERIOT-WATT, UK

---

**PROF LESZEK JAROSZEWICZ**

MILITARY UNIVERSITY OF TECHNOLOGY, POLAND

---

**PROF LADISLAV KALVODA**

CZECH TECHNICAL UNIVERSITY, CZECH REPUBLIC

---

**DR LUÍS ALBERTO FERREIRA**

INESC PORTO, PORTUGAL

---

**PROF LUC THÉVENAZ**

SWISS FEDERAL INSTITUTE OF TECHNOLOGY,  
SWITZERLAND

---

**PROF MANUEL LOPEZ-AMO**

PUBLIC UNIVERSITY OF NAVARRA, SPAIN

---

**DR MARK VOET**

FOS&S, BELGIUM

---

**PROF MARCO PETROVICH**

UNIVERSITY OF SOUTHAMPTON, UK

---

**PROF MARIO MARTINELLI**

UNIVERSITY OF MILANO, ITALY

---

**PROF REINHARDT WILLSCH**

INSTITUTE OF PHOTONIC TECHNOLOGY, GERMANY

---

**DR PIERRE FERDINAND**

CEA LIST INSTITUTE, FRANCE

---

**PROF STEPHEN JAMES**

CRANFIELD UNIVERSITY, UK

---

**DR THOMAS BOSSELMANN**

SIEMENS AG, GERMANY

---

**PROF TONG SUN**

CITY UNIVERSITY, UK

---

**PROF WACLAW URBANCZYK**

WROCLAW UNIVERSITY OF TECHNOLOGY, POLAND

---

**DR WALTER MARGULIS**

ACREO, SWEDEN

---

**PROF KARSTEN ROTTWITT** (OSA Representative)

TECHNICAL UNIVERSITY OF DENMARK, DENMARK

---

**LOCAL ORGANIZING COMMITTEE**

---

**PROF ARIEL GUERREIRO**

UNIVERSITY OF PORTO, PORTUGAL

---

**DR FRANCISCO ARAÚJO**

INESC PORTO, PORTUGAL

---

**DR IRENEU DIAS**

INESC PORTO, PORTUGAL

---

**PROF JOSÉ MANUEL BAPTISTA**

UNIVERSITY OF MADEIRA, PORTUGAL

---

**DR ORLANDO FRAZÃO**

INESC PORTO, PORTUGAL

---

**PROF PAULO MARQUES**

UNIVERSITY OF PORTO, PORTUGAL

---

**DR PEDRO JORGE**

INESC PORTO, PORTUGAL

---

**DR SANDRA PINTO**

INESC PORTO, PORTUGAL

---

**TECHNICAL COOPERATING ORGANIZATIONS**

---

**SPIE EUROPE**

---

**OPTICAL SOCIETY OF AMERICA**

---

**IEEE PHOTONICS SOCIETY**

---

**EUROPEAN OPTICAL SOCIETY**

---

**PORTUGUESE PHYSICS SOCIETY**

# FEATURES OF THE WORKSHOP

---

## WORKSHOP PROGRAMME

The Workshop programme will include:

---

Invited oral contributions given by recognized authorities in the domain of optical sensing and other related R&D fields;

---

Submitted contributions as posters;

---

Evaluation and prospective assessment of the exploitation and commercialization of optic/fibre optic sensing technology.

Optical fibre sensors will represent the core of the EWOFs'2010 meeting. Contributions will cover new sensing principles, new transducers based on micro and nanotechnologies, new subsystems, signal processing and sensor multiplexing, as well as new applications and the exploitation of this sensing technology.

---

## FORMAT OF THE WORKSHOP

The Workshop philosophy privileges the discussion and interaction between the attendees. Looking for this aim, all contributed papers will be presented as posters. Each poster session will be preceded by oral presentations which will deliver state-of-art views of the topic addressed in the session.

After each poster session, the workshop attendees will be divided into groups which will analyse the contributions and present their comments in the subsequent discussion sessions, initiated by a panel that includes one nominee from each group.

We believe this format will stimulate a constructive interaction among the attendees, motivating in particular the PhD students for an effective participation. Additionally, it will provide a forum for discussion of the trends and progresses in the optical fibre sensing field.

---

## AWARDS

To promote and recognize significant contributions for the advance of knowledge in Fibre Optic Sensing/Photonics, two Awards have been established:

---

### EWOFs'2010 STUDENT PAPER AWARD

For the best student paper in each of the four regular sessions of the Workshop;

---

### EWOFs'2010 LIFETIME ACHIEVEMENTS AWARD

To honour researchers who have significantly contributed to the development of this area of Human knowledge.

---

## **SPECIAL SESSION**

### **'OPTICAL FIBRE SENSORS FOR SUSTAINABLE ENVIRONMENT'**

In the morning of the first Workshop day, a Special Session on Optical Fibre Sensors for Sustainable Environment will address the advances, and perspectives of future developments in optical fibre sensing and related fields, connected with the nowadays crucial challenge of social welfare and progress compatible with a sustainable healthy environmental. Invited speakers will focus the guidelines for further analysis and discussion.

---

## **WORKSHOP PROCEEDINGS**

Accepted contributions will be compiled into conference proceedings which will be published by SPIE. The proceedings will be delivered to the attendees both in book and digital formats. All papers will be peer reviewed on the basis of a full length manuscript, and acceptance will be based on quality, relevance and originality.

---

## **TECHNICAL EXHIBITION**

The Workshop will include an Exhibition event where companies with activity in optical fibre sensing and optical fibre technology in general have the opportunity to show their latest products.

■ **DETAILS CAN BE FOUND IN**

<http://www.ewofs.org/exhibition>

---

## **SPECIAL ISSUE IN IEEE SENSORS JOURNAL**

The authors are invited to submit an extended version of the accepted papers for a Special Issue of IEEE Sensors Journal. The Editors of this Issue are:

---

### **PROF BRIAN CULSHAW**

UNIVERSITY OF STRATHCLYDE, UK

---

### **PROF IGNACIO R. MATIAS**

PUBLIC UNIVERSITY OF NAVARRA, SPAIN

---

### **PROF JOSÉ MIGUEL LÓPEZ-HIGUERA**

UNIVERSITY OF CANTABRIA, SPAIN

---

### **PROF BILL MACPHERSON**

UNIVERSITY OF HERIOT-WATT, UK

---

### **PROF JOSÉ LUÍS SANTOS**

UNIVERSITY OF PORTO, PORTUGAL

# SCOPE AND TOPICS

Optical Fibre Sensors will be the core of the Workshop, but the scope is wide enough to include new concepts, developments and applications in the field of optical fibre technology. Relevant topics include, but are not limited to, the following...

## PHYSICAL AND MECHANICAL SENSORS

Temperature // Pressure // Strain // Vibration // Acceleration // Flow // Rotation // Displacement

## DISTRIBUTED SENSING

Time // Frequency and Coherence Domain Reflectometry // Rayleigh, Raman and Brillouin Detection Techniques // Sensing Cable Designs

## ELECTROMAGNETIC PHENOMENA SENSORS

Magnetic Field // Electric Field // Current // Voltage

## MULTIPLEXING AND SENSOR NETWORKING

Topologies and Theories // Multiplexing Techniques // Applications

## CHEMICAL, ENVIRONMENTAL, BIOLOGICAL AND MEDICAL SENSORS

Remote Spectroscopy // Environmental Monitoring // Biophotonics // Instrumentation for Life Sciences // In Vivo Applications

## PASSIVE & ACTIVE DEVICES FOR PHOTONIC SENSING

Sources // Detectors // Modulators // Specialty Fibres // Integrated Optics Devices // Fibre Gratings // MEMS // Micro-Optic Components

## INTERFEROMETRIC & POLARIMETRIC SENSORS

Gyroscopes // Hydrophones // Geophones // Acoustic Sensor Arrays

## NEW CONCEPTS FOR PHOTONIC SENSING

Photonic Crystal Fibres // Hollow Core Fibres // Nanomaterials and Nano-Optical Devices // Metamaterials // Diffractive Optics // Plasmonic Components and Materials



# SOCIAL EVENTS

---

## WELCOME COCKTAIL

LOCATION Conference Hotel

DATE 7th September 2010 : 8 pm

---

## DOURO RIVER CRUISE

One hour Douro river cruise  
along Porto bridges

DATE 8th September 2010 : 7 pm

---

## REGIONAL DINNER

LOCATION Ferreirinha's Port Winery

DATE 8th September 2010 : 8 pm

---

## GALA DINNER

LOCATION Bolsa Palace

DATE 9th September 2010 : 8 pm

---

An additional programme is available  
for the accompanying persons.

■ DETAILS CAN BE FOUND AT

<http://www.ewofs.org/program>

### SIGNAL PROCESSING

#### APPLIED TO OPTICAL FIBRE SENSORS

Genetic Algorithms // Neural Networks //  
Data Fusion // Pattern Recognition //  
Statistical Methods //  
Virtual Instrumentation

### SMART STRUCTURES

#### AND SMART MATERIALS

Structural Health Monitoring //  
Strain and Deformation Sensors //  
Fibre Embedding Techniques //  
Condition Monitoring Algorithms

### SYSTEM APPLICATIONS

#### AND FIELD TRIALS

Relevant Installations and Field  
Demonstration of Photonic-based  
Sensing Systems // Metrology Projects //  
Commercialization Efforts

# MANUSCRIPT SUBMISSION PROCESS

Original papers reporting on new research and development results, practical implementations and novel applications in any of the technical areas described in the Workshop Scope are solicited.

## 4-PAGE MANUSCRIPT

A 4-page manuscript must be written following the SPIE margins and format guidelines.

■ [TEMPLATE FOR DOWNLOAD](#)

+ [DETAILED INSTRUCTIONS AVAILABLE AT](#)

<http://www.ewofs.org/submission>

## 35-WORD ABSTRACT

Submitting author is required to supply a 35-word abstract on-line. If accepted, this abstract text will be published on the EWOFs2010 web site and in the final printed program.

## SUBMISSION

The 4-page manuscript, the 35-word abstract and the Author Copyright agreement must be submitted electronically following the instructions.

■ [INSTRUCTIONS GIVEN AT](#)

<http://www.ewofs.org/submission>

## DEADLINE SUBMISSION

31st March 2010

# WORKSHOP REGISTRATION

	UP TO 30.06.2010	AFTER 30.06.2010
<b>REGULAR (MEMBER)*</b>	EUR 600	EUR 700
<b>REGULAR (NON-MEMBER)</b>	EUR 650	EUR 750
<b>STUDENT (MEMBER)*</b>	EUR 450	EUR 550
<b>STUDENT (NON-MEMBER)</b>	EUR 500	EUR 600
<b>ACCOMPANYING PERSON</b>	EUR 200	
<b>EXTRA PROCEEDING</b>	EUR 90	

\* SPIE / OSA / IEEE / EOS

THE FULL REGISTRATION FEE  
INCLUDES:

Full access to all Workshop Sessions

Conference Proceedings

Lunches and Coffee-breaks

8th + 9th + 10th September 2010

Welcome Cocktail

7th September 2010 : evening

Douro River Cruise

8th September 2010 : evening

Regional Dinner

8th September 2010 : evening

Gala Dinner

9th September 2010 : evening

Special fares for accommodation

in the conference hotel and in other hotels

To be eligible for the student rate, the individual must be enrolled in a full-time PhD or Masters program. Those enrolled in Post Doctoral programs are not eligible for student rates. Students are entitled to the same privileges as regular registrants. Students are required to present valid student identification at the time of registration.

**THE ACCOMPANYING PERSON  
REGISTRATION FEE INCLUDES:**

**Welcome Cocktail**

7th September 2010 : evening

---

**Half-day tour in Porto City**

8th September 2010 : afternoon

---

**Douro River Cruise**

8th September 2010 : evening

---

**Regional Dinner**

8th September 2010 : evening

---

**Gala Dinner**

9th September 2010 : evening

---

A full day tour in Douro River (Porto-Régua-Porto) is available to both participants and accompanying persons on 10th September 2010 at a cost of EUR 75 (lunch included).

■ DETAILS CAN BE FOUND IN

<http://www.ewofs.org/program>

■ REGISTRATION CAN BE DONE ON-LINE AT

<http://www.ewofs.org/registration>

**PAYMENT**

The preferred method of registration and payment is via the Workshop website by credit card, but other possibilities are available. All credit card on-line payments must be made in Euros. On acceptance of on-line payment, an automatic receipt will be issued. Upon manual receipt of payment and registration form, Workshop Secretariat will send a confirmation receipt.

# WORKSHOP LOCATION

Portugal's second largest city, Porto has a strong beauty all its own. Built on granite bluffs above the Rio Douro, its heart is a tangle of World Heritage-listed lanes tumbling steeply down to a medieval waterfront. It's hard not to become fascinated with Porto's riverside, dotted with old port-wine boats (barcos Rabelo), narrow streets and shadowy archways. In spite of the most obvious sights of the city being its six bridges (four modern, two nineteenth-century, all spectacular), the fascination of Porto lies more in its day-to-day life. Porto was known in Roman times as Portus Cale (the "sheltered port"). In fact, this is the origin of the Country's name. Porto's status as European City of Culture in 2001 was the signal for a massive urban redevelopment, and Porto's streets and squares have subsequently been turned upside-down in a flurry of construction work, including the provision of a new metro system and tram lines. Many of the city's historic buildings are being restored, particularly in the riverside Bairro of Ribeira – now a UNESCO World Heritage Site.

## PORTUGAL VISA AND PASSPORT REQUIREMENTS

Portugal is one of the members of the Schengen Area, for which most non UE-citizens need an entry visa.

■ [MORE INFORMATION ABOUT THE SCHENGEN AREA AND REQUIRED DOCUMENTS AT](http://europa.eu/abc/travel/doc/index_en.htm#visa)  
[http://europa.eu/abc/travel/doc/index\\_en.htm#visa](http://europa.eu/abc/travel/doc/index_en.htm#visa)

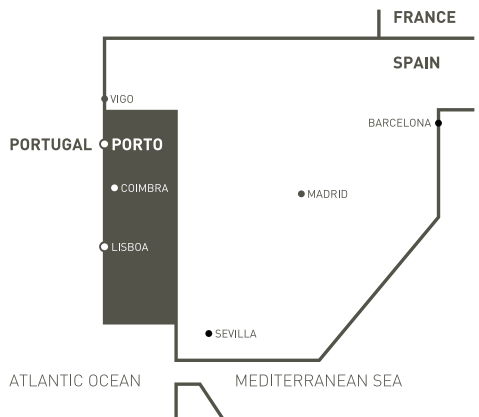
In case you need an entry visa, you should apply for a Schengen Visa. Please make sure you apply for it well in advance before your departure. For more information please contact the Portuguese Embassy or Consulate in your country.

■ [FIND MORE INFORMATION AT](http://www.mne.gov.pt/mne/en/infocidadao/portugal/)  
<http://www.mne.gov.pt/mne/en/infocidadao/portugal/>  
<http://www.visitportugal.com>

## HOW TO GET TO PORTO

Porto is quite easy to get to, either by plane or by land. The airport is located around 11 km north of the city centre and 20 km from the Workshop Hotel. Transfers will be arranged from the airport to the hotels

■ [TRANSFERS TIME SCHEDULE WILL APPEAR AT](http://www.ewofs.org/accomodation)  
<http://www.ewofs.org/accomodation>



# ACCOMMODATIONS

## HOTEL SOLVERDE SPA & WELLNESS CENTER

The Workshop will be held in a five star Deluxe Resort Hotel, located in front of the Granja Beach, near the city of Porto. Surrounded by a wide garden area, the Hotel offers a pleasant and quiet stay as well as modern infrastructures for Congresses and Events. The Hotel has a private car park, a garage, a heliport and shops, and nearby you can also find golf courses, horse riding routes, kart tracks and tennis courts.

For the Workshop attendees, a special price was arranged with the Hotel with values:

### HOTEL SOLVERDE \*\*\*\*\*

TWIN SINGLE OCCUPATION	EUR 105.00
TWIN DOUBLE OCCUPATION	EUR 115.00

These prices include breakfast and taxes, wireless internet, as well as all commodities of a five star hotel.



- 104 ROOMS
- 305 BEDS
- 30 Km FROM AIRPORT
- 15 Km FROM HOSPITAL
- 2 Km FROM CASINO
- 500 m FROM BEACH
- 1.000 m FROM BUS TERMINAL
- 2 Km FROM TRAIN STATION

### ADDRESS + CONTACTS

AVENIDA DA LIBERDADE 212  
4410-154 SÃO FELIX DA MARINHA  
VILA NOVA DE GAIA  
PORTO - PORTUGAL  
TEL +351 227 338 030  
FAX +351 227 313 200  
HOTELSOLVERDE@SOLVERDE.PT  
GPS: N 41.027630 W 8.641895

# ACCOMMODATIONS ALTERNATIVES

Accommodation alternatives at lower price were arranged with Hotel Fénix (four stars hotel) and Hotel Tuela (three stars hotel). For the Workshop attendees the tariffs are:

<b>HOTEL FÉNIX</b>	<b>****</b>	EUR 69.00
<b>HOTEL TUELA</b>	<b>***</b>	EUR 62.00

Both hotels are in Porto City center and 10 km from the Workshop Venue. Public transportation is available. If required, other travel arrangements will be implemented.

## RESERVATION

For hotel reservation the Workshop attendees shall contact directly the selected hotel indicating the participation in this event. The Workshop secretariat is happy to help when necessary.

■ PLEASE SEND A MESSAGE TO  
[ewofs@inescporto.pt](mailto:ewofs@inescporto.pt)

■ ALL DETAILS ABOUT ACCOMMODATION  
AND HOTEL INFORMATION CAN BE FOUND AT  
<http://www.ewofs.org/accomodation>

ALL INFORMATION ABOUT EWOFES AT  
[WWW.EWOFES.ORG](http://WWW.EWOFES.ORG)

JOIN US IN PORTO!

E 2010

W O F  
S



TOPROMOTETHEPRODUCTIVEINTER  
ACTION OF GENERATIONS IN THIS  
SCIENTIFIC AND **TECHNOLOGICAL**  
**ADVENTURE** AROUND THE SUBJECT  
OF OPTICAL FIBRE SENSORS. NEW  
SENSING PRINCIPLES. NEW TRANS  
DUCERS BASED ON MICRO AND NANO  
TECHNOLOGIES. NEW SUBSYSTEMS  
SIGNAL PROCESSING AND SENSOR  
MULTIPLEXING. NEW APPLICATIONS  
AND **EXPLOITATION** OF THIS SENSING  
TECHNOLOGY. >> **EWOF5 2010 PORTO**

LOCAL ORGANIZERS



**INESC PORTO**  
LABORATÓRIO ASSOCIADO

**U. PORTO**

**INESC PORTO**

PHYSICS DEPARTMENT

FACULTY OF SCIENCES OF UNIVERSITY OF PORTO

R CAMPO ALEGRE 687 . 4169-007 PORTO . PORTUGAL

T +351 220 402 301 . F +351 220 402 437

EWOF5@INESCPORTO.PT