

WP 8 Communication and dissemination for promoting hadron-therapy research facilities to end-users

Pawel Olko and Michael Waligorski

IFJ PAN and COOK, Kraków, Poland

IFJ PAN - Institute of Nuclear Physics, Polish Academy of Sciences, Radzikowskiego 152 31-342 Kraków, Poland
COOK - The Maria Skłodowska-Curie Institute, Centre of Oncology Kraków Division, Garncarska 11, 31-115 Kraków Poland



Proton radiotherapy at the Institute of Nuclear Physics, IFJ PAN, in Krakow, Poland

First 15 patients have been treated on 60 MeV proton beam from AIC-144 cyclotron

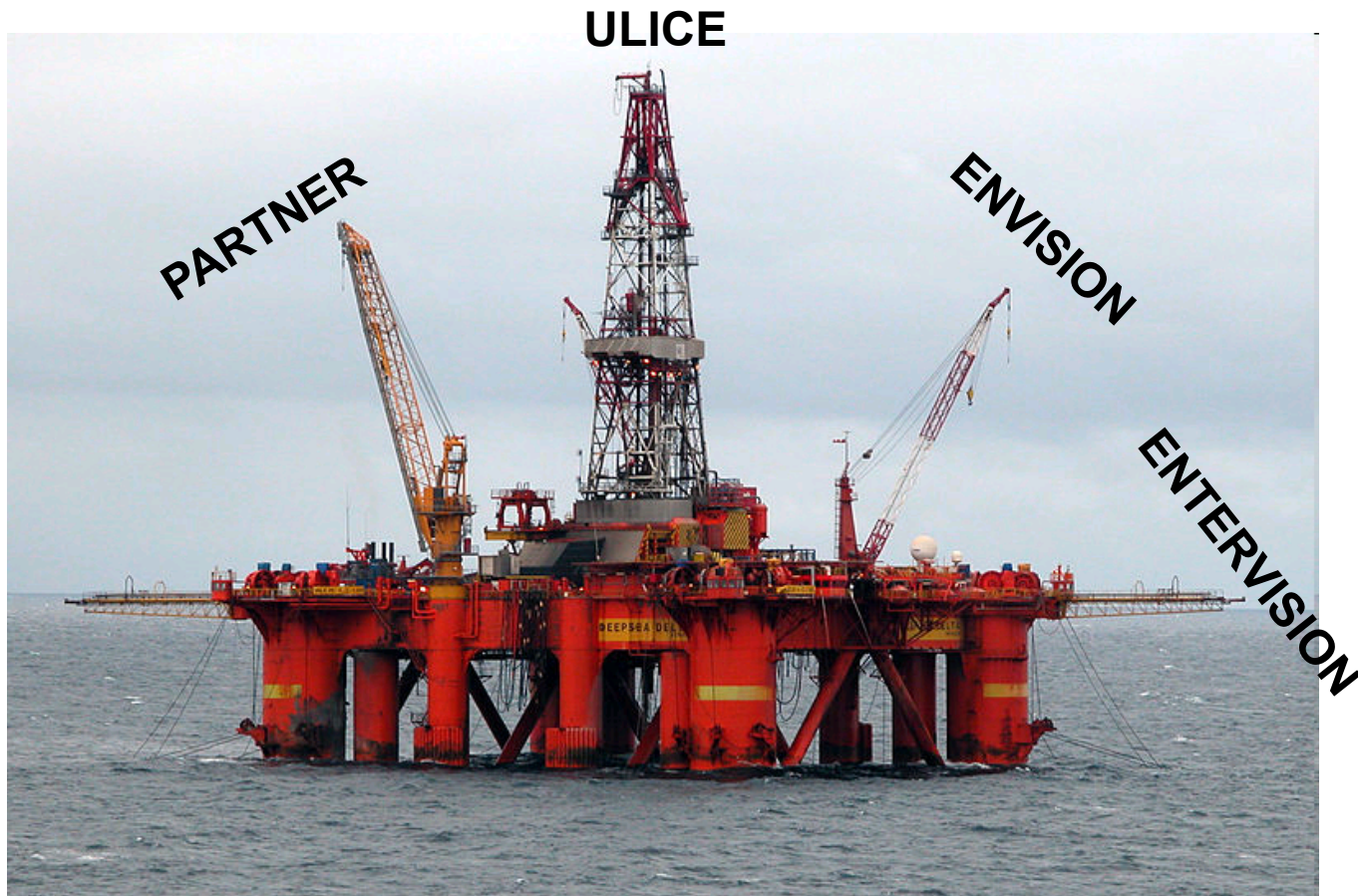


230 MeV IBA cyclotron is operational in the new IFJ PAN facility
Scanning gantry will be commissioned in 2014



ENLIGHT

– the platform for hadron radiotherapy



- established in 2002 to coordinate European efforts in hadron radio therapy
- >400 participants, 25 European countries
- umbrella over 4 projects

Addresses two main issues:

Development of instruments for high-performance hadron therapy

Collaboration among the existing and planned centres



ARC|AUH,AS|CERN|CNAO|ESTRO|ETOILE|GSI|IBA|IFJPAN|INFN|KI|MEDA|M UW|RUNMC|SAG|TUD|UCL|UKL-HD|UNIMAR|UOXF

**WP-8: Main goal of this work package :
to promote ULICE activities to ENLIGHT
community**

Participants : CERN, CNAO, ESTRO, IFJ PAN

Physical and Biological Basis of Hadron Radiotherapy

Krakow, Poland, 3 -4 September, 2011



Physical and biological basis of hadron radiotherapy
Satellite symposium of the 14th International Congress of Radiation Research
Kraków, Poland, 2 – 3 September, 2011

Science as a public duty - following the ideas and work of Maria Skłodowska-Curie



It is our pleasure to invite you to participate in our workshop entitled **Physical and biological basis of hadron radiotherapy**, a satellite event of the **14th International Congress of Radiation Research (ICRR 2011)**. Our Workshop will be held in Krakow, Poland, on the 2nd September to 3rd September 2011, at the Collegium Novum of the Jagiellonian University.

The Workshop organized, jointly by the Institute of Nuclear Physics of the Polish Academy of Sciences and the Polish Radiation Research Society, will provide its participants with an opportunity to informally discuss current topics in proton and carbon radiotherapy, clinical aspects of ion radiotherapy, ion beam dosimetry, unwanted patient exposure, radiobiology for ion radiotherapy and other relevant subjects.

In 2013 in Krakow the new proton therapy centre based on the IBA C-235 cyclotron will complement our existing proton eye radiotherapy facility. The Workshop participants will be also invited to discuss issue of design, acceptance and commissioning of new ion beam facilities.

We look forward to seeing you in Krakow at our Workshop!

Organizing institutions:



Institute of Nuclear
Physics



Polish Radiation
Research Society



The Mayor of the
City of Krakow



Stanislaw Krakow
The Governor
of Malopolska



Rector of the
Jagiellonian University

Symposium is held under
the auspices of:

A satellite event accompanying the
14th International Congress of Radiation Research,
Warsaw, Poland, August 28 – September 1, 2011

www.icrr2011.org

Topics discussed:

- clinical aspects of ion radiotherapy
- ion beam dosimetry,
- unwanted patient exposure
- radiobiology for ion radiotherapy

95 participants

<http://icrr2011.satellitekrak.ifj.edu.pl/htherapy/>

The ULICE project is co-funded by the [European Commission under FP7](#)
Grant Agreement Number 228436.



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Symposium is held under the auspices of:

ENLIGHT, PARTNER and ULICE framework programs to support particle radiotherapy in Europe

for the ULICE Collaboration
Pawel Olski¹, Michael P. R. Waligorski^{1,2}

¹ Institute of Nuclear Physics, Polish Academy of Sciences, Radzikowskiego 35, 31-340, Kraków, Poland
² The Adam-Mickiewicz-Library Centre of Oncology, Kraków, Gliwice, Gdansk and 71-274-100 Poznań, Poland



ENLIGHT
The European Network for Light Ion Therapy

The European Network for Light Ion Therapy (ENLIGHT), was established in 2002 to coordinate and adapt state-of-the-art techniques in the areas of particle acceleration and detection for the needs of hadron therapy. A major achievement of ENLIGHT has been to bring traditionally separate communities of clinicians, physicists, biologists and engineers with experience and interest in particle therapy to work together. The ENLIGHT community agreed that the goals of the collaboration could be best met by two complementary approaches: research in areas needed for highly effective hadron therapy, and endeavouring to establish and implement common standards and protocols for testing patients.

Under the umbrella of **ENLIGHT** there are currently four European Commission-funded projects:
PARTNER, ULICE, ENVISION and INTERVISION

PARTNER
The Particle Training Network for European Radiotherapy

Particle Training Network for European Radiotherapy (PARTNER) is a 4-year Marie Curie Training project funded by the European Commission which aims at the creating a new generation of experts in the field of hadron therapy. Ten Academic Institutes and Research Centres and two leading companies participate in this project, forming a unique interdisciplinary and multinational European network. PARTNER offers research and training opportunities to 25 young biologists, engineers, physicists and physicians and allows them to actively develop modern techniques for testing cancer in close collaboration with leading European institutions. For this project PARTNER relies on cutting-edge research and technology development, effective networking, and open access to animal facilities as well as on providing access to leading specialists in this field.

more information at <http://partner.web.cern.ch/partner/>

ULICE
The Union of Light Ion Centres in Europe

The Union of Light Ion Centres in Europe (ULICE) is a 4-year project set up by 20 leading European research organisations, including two leading industrial partners, to respond to the need for greater access to hadron therapy facilities for particle therapy research. The project is built around three pillars: 1) Joint Research Activities - focus on development of instruments and protocols for early design, improvement of fine dimensional particle beam delivery, adaptive treatment planning, mechanisms for patient selection to the whole European Community; 2) Networking - increasing cooperation between facilities and research communities working to work with the research infrastructure; 3) Transnational access - 3-step approach, using a combination of open-defined clinical trial programmes to allow researchers to visit the facility, and radiobiological and physics experiments to take place.

more information at <http://ulice.web.cern.ch/ulice/>

ENVISION
European NoVel Imaging Systems for Ion Therapy

more information at <http://envision.web.cern.ch/ENVISION/>

INTERVISION
Enhanced real-time imaging for radiotherapy

more information at <http://intervision.web.cern.ch/INTERVISION/>

The ULICE project is funded by the European Commission under Grant Agreement No 228436

<http://icrr2011.satellitekrak.ifj.edu.pl/htherapy/>

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ASEPS

Asia Europe Physics Summit
26-29.10.2011 Wrocław, Poland

ASEPS is a platform to forge Asia-Europe physics programme strategies by discussing the scientific priorities and possible shared contributions to large scale infrastructures or networks in an Asia-Europe cooperation framework.

ASEPS promotes synergies between different fields of physics and between physics and other research fields: biology and health, environment, energy – including hadrontherapy





ASEPS

Asia Europe Physics Summit

26-29.10.2011 Wrocław, Poland

- Presentation of Manjit Dosanjh - From Particle Physics to Health, Collaborate or die.....
- Poster P.Olko, M. Waligorski
- Distribution of leaflets with the poster

ENLIGHT, PARTNER and ULICE
framework programs to support particle radiotherapy in Europe

for the ULICE Collaboration
Pawel Olko¹, Michael P. R. Waligorski^{1,2}

¹ Institute of Nuclear Physics, Polish Academy of Sciences, P.O. Box 59, 31-094 Kraków, Poland
² The Adam-Cieszkowski-Curie Centre of Oncology, Kraków Division, Danzowska 15, 31-033 Kraków, Poland

ENLIGHT
The European Network for Light Ion Therapy

The European Network for Light Ion Hadron Therapy (ENLIGHT), was established in 2002 to coordinate and adapt state-of-the-art techniques in the areas of particle accelerators and detectors for the needs of hadron therapy. A major achievement of ENLIGHT has been to bring together researchers from different disciplines, physicists, biologists, and engineers with experience and interest in particle therapy to work together. The ENLIGHT community agreed that the benefits of the collaboration could be best met by two complementary systematic research in areas needed for highly effective hadron therapy, and accordingly to establish and implement common standards and protocols for treating patients.

Under the umbrella of ENLIGHT there are currently four European Commission funded projects: PARTNER, ULACE, ENVISION and RHYTERVISION.

PARTNER
The Particle Training Network for European Radiotherapy

Particle Training Network for European Radiotherapy (PARTNER) is a 4-year Marie Curie Training project funded by the European Commission which aims at the training a new generation of experts in the field of hadron therapy. The Academic Lecturers and Research Centers and two leading companies participate in this project, forming a unique interdisciplinary and multinational European network. PARTNER offers research and training opportunities to 12 young biologists, engineers, physicians and physicists and allows them to actively develop new techniques for treating cancer in close collaboration with leading European institutions. The first group in PARTNER starts on cutting-edge research and technology development, effective accelerating, neutron access in animal facilities as well as on providing access to leading specialists in this field.

more information at <http://www.web.com.ch/partner/>

ULACE
The Union of Light Ion Centres in Europe

The Union of Light Ion Centres in Europe (ULICE) is a 4-year project set up by 10 leading European research organizations, including two leading industrial partners, to strengthen the union for greater access to hadron therapy facilities for particle therapy research. The project is built around three pillars: 1) Joint Research Activities - focus on development of instrumentation and protocols for patient design, improvement of the treatment of particle therapy delivery, adaptive treatment planning, optimization for patient selection in the whole European Community; 2) Networking - increasing cooperation between facilities and research communities working to work with the research infrastructure; 3) Transnational access - 2-step approach, using a combination of pre-defined shared and pre-proposals to allow researchers to visit the facility, and interdisciplinary and physics experiments to take place.

more information at <http://www.web.com.ch/ulice/>

ENVISION
European Neutron Imaging System for Ion Therapy

more information at <http://www.web.com.ch/envision/>

RHYTERVISION
Enhanced real-time imaging for radiotherapy

more information at <http://www.web.com.ch/rhytervision/>

The ULICE project is funded by the European Commission under Grant Agreement No 228436.



FROM THE ENLIGHT COORDINATOR



IT SEEMS LIKE YESTERDAY, AND YET TEN YEARS HAVE PASSED SINCE OUR NETWORK WAS LAUNCHED.

At the time, the establishment of a multidisciplinary platform which would gather clinicians, physicists, biologists, computer experts and engineers with experience in proton and carbon ion therapy seemed like a dream. And indeed, it has not always been easy, but looking at the size, cohesion, and scientific impact of ENLIGHT today, it was definitely worth it.

In 2002, ENLIGHT was created to foster effective collaborations. In 2012, we can affirm that ENLIGHT has fulfilled that need, acting as an essential catalyst for partnerships among different disciplines, research institutions, and countries. Now challenges lie ahead of us: we started planning for the future at the meeting in Marburg last year, and we will refine our strategy in Paris in September.

Scientific potential was turned into reality by the enthusiasm and energy of the people involved. From senior researchers to young PhD students, each one of us has been contributing to the success of the network. This same collaborative spirit inspired us to create HIGHLIGHTS. This publication is our new platform

for keeping us all connected as the network expands and the young researchers from our first Marie Curie project pursue their careers around the world. We are a community on the move.

A warm thank you goes to all the contributors to our first issue.

Now the opportunity is yours to get your news and views across to the rest of the community.

Manjit Dounjh

Manjit Dounjh

FOCUS ON... **RADIOTHERAPY IN POLAND**

From proton beam eye radiotherapy to a scanning proton gantry in Krakow, Poland

On February 18, 2011, the first two patients from the Department of Ophthalmology and Ophthalmic Oncology of the Jagiellonian University's Collegium Medicum (Prof. B. Romanowski-Dixon, MD) received ocular proton radiotherapy treatment at the Institute of Nuclear Physics of the Polish Academy of Sciences (IP PAN) in Krakow, Poland, in collaboration with the Centre of Oncology in Krakow (Prof. M. Rutkowski, MD).

in-house designed AIC-144 synchronous cyclotron, beam delivery system and treatment room.

Our 60 MeV proton radiotherapy facility, supervised by Dr. Jan Swakotz (IP PAN), is the only one in Poland (a 40-million people country) and also the first to operate in Central-Eastern Europe. It should be able not only to treat all Polish patients affected by ocular melanoma (some 100 cases per year), but also patients in neighbouring European countries. From 2013 onwards, proton therapy will be considered standard treatment of eye-cancer patients, and costs are expected to be covered by the Polish National Health Fund.

Up to July 2012, a total of fifteen patients have been treated. For the first time, proton radiotherapy of the eyeball has been made available to patients in Central Europe. The eye melanoma patients undergo a four-fraction treatment by a 60 MeV proton beam from our



The optical bench and patient treatment chair of the proton radiotherapy facility at IP PAN (the beam enters from the far right towards the viewer).

• **Contribution to ENLIGHT Highlights**

TO DO LIST 2012

| What? | How disseminated? | When? |
|---|--|------------------|
| First report from the ULICE meeting in Pavia | e-mail (ENLIGHT) ULICE Web Page | October 10, 2012 |
| Summary of ULICE achievements and what is foreseen in the coming year | Brochure in pdf Distributed by e-mail | December 2012 |
| Major popular paper on the achievements of ULICE | Journal | February 2013 |



Thank you!

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