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**ICTP-IAEA Joint Workshop on Nuclear Data for Science and Technology:
Medical Applications**

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Medical Physics at the Abdus Salam International Centre for Theoretical Physics

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MEDICAL PHYSICS AT THE ABDUS SALAM ICTP

REVIEW OF THE PROGRAMMES AND
ACTIVITIES FROM 1982 TO 2013
AND FUTURE PROGRAMMES

WHAT IS THE AS - ICTP?

- IT IS AN INTERNATIONAL ORGANIZATION, BELONGING TO THE UN SYSTEM (THROUGH UNESCO AND IAEA), RULED BY A TRIPARTITE AGREEMENT UNESCO - IAEA – ITALY (WITH ITALY PROVIDING MOST OF THE FUNDS)
- IT WAS FOUNDED IN 1964 BY THE INITIATIVE OF THE NOBEL LAUREATE ABDUS SALAM

- ITS MANDATE IS TO FOSTER THE ADVANCEMENT OF PHYSICS (OR BETTER OF NATURAL SCIENCES) IN THE DEVELOPING COUNTRIES
- ALTHOUGH ITS NAME CONTAINS "THEORETICAL PHYSICS" (MAINLY FOR HISTORICAL REASONS), IN FACT ITS PROGRAMME COVERS MANY AREAS, BOTH OF FUNDAMENTAL AND APPLIED PHYSICAL AND MATHEMATICAL SCIENCES

ICTP MANDATE

- " PROMOTING SCIENTIFIC EXCELLENCE IN DEVELOPING COUNTRIES"

VERY IMPORTANT

THE AS-ICTP IS AT THE SAME TIME A RESEARCH INSTITUTION, WITH RESEARCH GROUPS IN:

- -HIGH ENERGY PHYSICS
- -CONDENSED MATTER PHYSICS
- -MATHEMATICS
- -EARTH PHYSICS

HIGH LEVEL TRAINING

- AND AN INSTITUTION OF HIGH LEVEL TRAINING, IN ALMOST ALL THE PURE AND APPLIED BRANCHES OF PHYSICS AND MATHEMATICS
- AMONG THE SUBJECTS COVERED IN THE PROGRAMME OF HIGH LEVEL TRAINING, AN IMPORTANT ROLE IS TAKEN BY:

MEDICAL PHYSICS

- THE PRESENT ACTIVITIES IN THE FIELD OF MP AT THE AS-ICTP COVER:
- TRAINING COURSES/SCHOOLS/COLLEGES (OFTEN IN COOPERATION WITH THE IAEA) WHICH OFTEN INCLUDE PRACTICALS AT THE TRIESTE HOSPITAL, (THROUGH AN AGREEMENT ICTP-HOSPITAL), OR IN THE ICTP INFO LABS

MORE DETAILS ON ACTIVITIES

- TRAINING ACTIVITIES: ADRESSED TO ALREADY ACTIVE PROFESSIONAL MEDICAL PHYSICISTS, WHO NEED:
- EITHER AN UPDATING IN THE BROAD AREAS OF IMAGING AND/OR THERAPY (COLLEGES)
- OR A DEEPER, MORE ADVANCED KNOWLEDGE IN A WELL-DEFINED AREA (JOINT ICTP-IAEA SCHOOLS)

- ASSOCIATE MEMBERS: MATURE MEDICAL PHYSICISTS AIMIN TO START A RESEARCH COOPERATION WITH LOCAL SCIENTIFIC INSTITUTIONS (UNIVERSITY, MP DEPARTMENTS OF HOSPITALS. ELETTRA. INFN..)
- EXAMPLE : CUBA – TRIESTE PROJECT FOR MAMMOGRAPHY

1983 – TRAINING ACTIVITIES BEGIN

(ANNA BENINI, SERGIO MASCARENHAS)

- WORKSHOP ON MEDICAL PHYSICS, 17 OCT- 4 NOV 1983
- FIRST WORKSHOP IN QUALITY CONTROL IN MEDICAL PHYSICS: X-RAY DIAGNOSTIC EQUIPMENT, 13-18 MAY 1985
- SECOND WORKSHOP IN QUALITY CONTROL IN MEDICAL PHYSICS: X-RAY DIAGNOSTIC EQUIPMENT, 14-19 APR 1986
- FIRST TRAINING COURSE IN DOSIMETRY AND DIAGNOSTIC RADIOLOGY, 16-25 MARCH 1994
- SECOND TRAINING COURSE IN DOSIMETRY AND DIAGNOSTIC RADIOLOGY, 23-27 OCTOBER 1995

1988 – COLLEGES IN MEDICAL PHYSICS BEGIN (BENINI, CAMERON, SPRAWLS, TABAKOV)

- 3-4 WEEK DURATION, 50-70 PARTICIPANTS EACH; MAINLY DEVOTED TO IMAGING, BUT ALSO RADIOPROTECTION AND DOSIMETRY
- 1) 1988; 2) 1990; 3) 1992; 4) 1994; 5) 1996; 6) 1999; 7) 2002; 8) 2004; 9) 2006; 10) 2008; 11) 2010; 12) 2012; 13) 2014

SUBJECTS/TOPICS ARE SIMILAR (WITH UPDATED CHANGES DUE TO MODERN DEVELOPMENTS), BUT

- STUDENTS FROM DEVELOPING COUNTRIES ALWAYS NEW AND DIFFERENT; FROM 2012, PRACTICALS AT THE TRIESTE HOSPITAL
- TRAINING AND EDUCATION STILL BADLY NEEDED

JOINT ICTP-IAEA ADVANCED SCHOOLS

- 2007 – NEW ADDITIONS: JOINT ICTP-IAEA ADVANCED SCHOOLS
 - ORGANIZED BY IAEA EXPERTS
 - SHORTER DURATION: 1-2 WEEKS, DIFFERENT PURPOSE: ADDRESSED TO PROFESSIONALS (20-25 STUDENTS ONLY) WANTING TO IMPROVE THEIR KNOWLEDGE IN A WELL-DEFINED TOPIC
 - SMALLER NUMBER SINCE ESSENTIAL COMPONENT IS PRACTICALS AT THE TRIESTE HOSPITAL

ICTP-IAEA JOINT SCHOOLS

- DOSIMETRY AND DIAGNOSTIC RADIOLOGY AND ITS CLINICAL IMPLEMENTATION, 2009
- INTERNAL DOSIMETRY FOR MEDICAL PHYSICISTS SPECIALIZING IN NUCLEAR MEDICINE, 2010
- ADVANCED RADIOTHERAPY TECHNIQUES WITH EMPHASIS ON IMAGING AND TREATMENT PLANNING, 2011
- ADVANCED COURSE ON MAMMOGRAPHY, 2011
- MONTECARLO RADIATION TRANSPORT AND ASSOCIATED DATA NEEDS FOR MEDICAL APPLICATIONS, 2011
- TRAINING COURSE ON RADIATION PROTECTION FOR PATIENTS, 2012
- FIRST TRAINING WORKSHOP ON TRANSITION FROM 2D TO 3D CONFORMAL RADIOTHERAPY AND IMRT, 2012

2013 PROGRAMME

- SECOND TRAINING COURSE ON RADIATION PROTECTION FOR PATIENTS, 16-27 SEPTEMBER (JOINT ICTP-IAEA)
- WORKSHOP ON NUCLEAR DATA FOR SCIENCE AND TECHNOLOGY: MEDICAL APPLICATIONS, 30 SEPTEMBER – 2 OCTOBER (JOINT ICTP-IAEA)
- TRAINING COURSE ON MEDICAL PHYSICS FOR RADIATION THERAPY: DOSIMETRY AND TREATMENT PLANNING FOR BASIC AND ADVANCED APPLICATIONS, 25 NOVEMBER – 6 DECEMBER (THIS WILL BECOME A REGULAR ACTIVITY IN THERAPY: COLLEGE ON IMAGING IN THE EVEN YEARS, ON THERAPY IN ODD YEARS)
- INTERNATIONAL TRAINING WORKSHOP ON ACCURACY REQUIREMENTS AND UNCERTAINTY IN RADIATION THERAPY, 9-13 DECEMBER (JOINT ICTP-IAEA)

2014 PROGRAMME

- JOINT ICTP-IAEA WORKSHOP ON DETERMINATION OF UNCERTAINTIES OF MEASUREMENTS IN MEDICAL RADIATION DOSIMETRY 9-13 JUNE
- COLLEGE IN MEDICAL PHYSICS (ADVANCES IN MEDICAL IMAGING PHYSICS TO ENHANCE HEALTHCARE IN THE DEVELOPING COUNTRIES) 1-19 SEPTEMBER
- JOINT ICTP-IAEA MEETING ON TRAINING IN PATIENT SAFETY IN RADIOTHERAPY 24-28 NOVEMBER

MASTER IN MEDICAL PHYSICS

- NEW IMPORTANT ADDITION: UNITS-ICTP MASTER IN MEDICAL PHYSICS
- PURPOSE: TRAIN MEDICAL PHYSICISTS TO BE ABLE TO WORK IN HOSPITALS
- MASTER IN MEDICAL PHYSICS DEGREE AWARDED BY TS UNIV
- DURATION: 2 YEARS (FIRST BIENNIUM 2014-15)
- FIRST YEAR: LECTURES AT THE ICTP, AND PRACTICALS AT THE TRIESTE AND UDINE HOSPITALS
- SECOND YEAR: CLINICAL TRAINING IN AN HOSPITAL
- NUMBER OF STUDENTS: MINIMUM 10, MAXIMUM 15
- ICTP HAS RECEIVED 244 APPLICATIONS!

- THANK YOU FOR YOUR ATTENTION