



The Abdus Salam
International Centre for Theoretical Physics



ICTP

Supporting excellence in science,
with special attention paid to the needs
of developing countries

AN OVERVIEW OF RESEARCH, TRAINING AND EDUCATION
ACTIVITIES AND OPPORTUNITIES AT ICTP





Research at ICTP

ICTP is an institution that is run by scientists for scientists.
It has fostered research groups in several areas of physical sciences and mathematics.

Applied Physics (AP)

The diverse AP section at ICTP encompasses various research areas, including aeronomy and radiopropagation, medical physics, fluid dynamics, plasma physics, and optics and lasers. Many of these areas are among those for which there is a growing demand in developing countries.

Condensed Matter and Statistical Physics (CMSP)

ICTP's CMSP section investigates the physics of disordered, mesoscopic and strongly correlated electron systems, electronic structure and condensed matter computer simulations, statistical physics and interdisciplinary applications, and physics related to synchrotron radiation.

Earth System Physics (ESP)

The growing awareness of global environmental change and its consequence on developing countries make the study of our planet critical. ICTP's ESP section studies a wide range of the Earth, from fluid Earth (oceans) and the atmosphere to the Earth's interior.

High Energy, Cosmology and Astroparticle Physics (HECAP)

The HECAP section at ICTP is studying some of the most exciting areas in physics today, from string theory to physics at the Large Hadron Collider, from neutrino phenomenology to alternative cosmologies.

Mathematics (Math)

The main focus of the Math section at ICTP is geometry and analysis. In geometry, the main direction of research is algebraic geometry, analytic geometry and topology; and in analysis, functional analysis and partial differential equations.

Multidisciplinary Laboratory (MLab)

The MLab looks at technological and experimental aspects of physics. MLab activities include scientific instrumentation development, numerical simulations, and theoretical and statistical analysis. The goal is to expose visiting scientists and Ph.D. students to practical problems related to interdisciplinary research.

Training and Education at ICTP

ICTP provides scientists from developing countries with the continuing training and skills that they need to enjoy long and productive careers. By providing these scientists with on-going opportunities for research and learning, ICTP has been a major force in stemming the scientific brain drain from the developing world.

TRAINING

- Organises more than 60 conferences/workshops annually
- Hosts about 6,000 scientists from 120 nations each year

EDUCATION

Diploma Programme: Aims to train students from developing countries in order to allow them to compete favourably for graduate studies in any centre of learning in the world. The programme consists of a rigorous, one-year, pre-doctoral course of study in areas including high energy physics, condensed matter physics, mathematics, earth system physics, and basic physics.

ICTP/IAEA Sandwich Training Educational Programme (STEP): offers fellowship opportunities to Ph.D. candidates from developing countries and provides scientific co-supervisors at ICTP or one of its collaborating institutions, for study in scientific fields covered by the IAEA Technical Cooperation Programmes and those falling in the scientific and technical competence of ICTP and its associated institutions.

Joint Ph.D. programme with University of Trieste: ICTP's Ph.D. Programme in Environmental Fluid Mechanics is a joint programme sponsored by ICTP, the University of Trieste, and three Italian scientific institutions in Trieste: Istituto di Scienze Marine, Consiglio Nazionale delle Ricerche (ISMAR-CNR), Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS), and Osservatorio Meteorologico Regionale - Friuli Venezia Giulia (OSMER-FVG).

ICTP/University of Trieste Laurea Magistralis: in physics, and in astrophysics and space physics.

EXTERNAL ACTIVITIES

ICTP's Office of External Activities (OEA) provides research and training activities for physicists and mathematicians living and working in developing countries. Such support complements the training and research that ICTP provides at its campus in Trieste. Assistance is carried out through Affiliated Centres, support of Ph.D. courses and research projects (including the coordination of research networks), scientific meeting support, support for visiting scholars, and institutional collaborations.

CAREER SUPPORT

ICTP Visitor's Programme: Besides the high-level training courses, workshops, conferences, topical meetings and regular research activities which take place at ICTP, the scientific sections offer also visitor programmes. These programmes provide scientists from developing countries with opportunities to conduct research and study developments in physics and mathematics.

Associate and Federation Schemes:

The Associateship Scheme enables individual scientists to maintain long-term, formal contacts with the stimulating and active scientific environment of ICTP.

Federation Arrangements are contracts of scientific collaboration between ICTP and a scientific institution in a developing country. The arrangement allows the collaborating institute to send junior representatives to ICTP, on a cost-sharing basis, for an average stay of one month (but up to 6 months, depending on the location of the country).

Training and Research in Italian Laboratories (TRIL): The TRIL programme gives scientists from developing countries the opportunity to spend periods ranging from a few months to one year at Italian research laboratories in universities, governmental facilities and private institutions. The Italian scientific community has been actively contributing to this initiative, offering the possibility of high-level scientific activities and financial support through specific agreements with the main research institutions of Italy.

Training at ELETTRA Synchrotron Light Laboratory: The ICTP-ELETTRA Users Programme offers access to the synchrotron radiation facility ELETTRA in Trieste to scientists from developing countries for experiments on its beamlines.

SESAME Programme: The Synchrotron light for Experimental Science and Applications in the Middle East (SESAME) Programme aims to build a synchrotron light source in Jordan, at Al Bal'qa University, and to operate it as an international laboratory for all scientists from the region. ICTP has a role in the training programmes of SESAME, by providing opportunities for Middle Eastern scientists and engineers to spend several months at existing facilities in Europe.





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