

**ICTP after 45: Science and Development for a Changing World**  
**8-10 November 2010**  
**Under the high patronage of the President of the Italian Republic**

The International Centre for Theoretical Physics (ICTP) has recently passed an important milestone: its 45th anniversary. With its new leadership and in light of rapid economic and technological developments taking place worldwide, ICTP is hosting a high-level gathering of top scientists and policy makers to discuss the implications of global change on science and education in the developing world. Nobel Prize winners, government ministers, and leaders of development agencies from developed and developing countries, will join in an international dialogue that could determine new, effective strategies for scientific research and education.

**DAY 1**

**Monday 8 November**

**09:00 Welcome remarks and keynote addresses by:**

Fernando Quevedo (Director, ICTP)

Roberto Petronzio (President, INFN and Chairman, ICTP Steering Committee)

Gretchen Kalonji (Assistant Director-General, UNESCO, representing the Director-General)

Werner Burkart (Deputy Director General, IAEA, representing the Director General)

**10:00 Remarks by local authorities:**

Roberto Molinaro (Regione Autonoma Friuli Venezia-Giulia)

Roberto DiPiazza (Mayor of Trieste)

Adele Pino (Provincia di Trieste)

**10:20 ICTP Strategic Plan**, Fernando Quevedo (Director, ICTP)

*10:45 Coffee break*

**11:15 2010 Dirac Medal Award Ceremony**

Italian physicist Nicola Cabibbo† (University La Sapienza, Rome, Italy) and Indian-American physicist Ennackal Chandy George Sudarshan (University of Texas, Austin, Texas, USA) have been awarded ICTP's Dirac Medal for 2010.

Dirac Medal lecture: Luciano Maiani (President CNR)

**“Universality of the Weak Interactions: recalling Nicola Cabibbo”**

Brief remarks by Ennackal Chandy George Sudarshan

*12:30 Lunch*

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† posthumously

14:00 **Keynote speeches**

Chair: Roberto Petronzio (INFN)

**The Future of Science**

David Gross (Director, The Kavli Institute for Theoretical Physics, USA, and Physics Nobel Laureate 2004)

**The Importance of Science for Developing Countries**

Jacob Palis (President, TWAS)

15:30 *Coffee break*

16:00 **Session on supporting science in the developing world**

Co-chairs: Werner Burkart (Deputy Director General, IAEA), Gretchen Kalonji (Assistant Director-General, UNESCO)

An overview of international support efforts, with contributions by high-level representatives of governments, agencies and institutions from developing, emerging, and developed countries.

Ali Al-Shamlan (Director General, Kuwait Foundation for the Advancement of Science)

Jean-Pierre Ezin (Commissioner for Human Resources, Science and Technology, African Union)

Saroj Kumar Jha (World Bank)

Eduardo Sorribes Manzana (Policy Advisor, DG Development, European Commission)

Franklin Moore (Senior Development Counsellor, USAID)

Jacob Palis (President, TWAS)

Atta-ur-Rahman (Coordinator General, COMSTECH)

17:15 **Session on the importance of education and training in the developing world**

Chair: Walter Kohn (UC, Santa Barbara and Chemistry Nobel Laureate, 1998)

John Ellis (CERN)

Mohamed H.A. Hassan (Executive Director, TWAS)

Arlen Hastings (Executive Director, Science Initiative Group)

Saroj Kumar Jha (World Bank)

Javier Moguerza (representing Young Scientist Ambassador Programme)

Konrad Osterwalder (Rector, UNU)

Helen Quinn (Stanford University)

Herwig Schopper (Chairman, Scientific Board, IBSP Programme, UNESCO)

18:15 **Signing ceremony – ICTP-South America**

## **DAY 2**

### **Tuesday 9 November**

#### **09:00 Sessions on Science within a Changing Geopolitical Framework**

A series of presentations focusing on regional success stories and challenges regarding science and mathematics education in developing countries. Contributors will include ministers, policy makers, and high-level scientists.

#### **Science in Africa**

Chair: Jean-Pierre Ezin (Commissioner for Human Resources, Science and Technology, African Union)

Francis K.A. Allotey (President, African Physical Society)

Hafid Aourag (Director General, Algerian Research Council)

Thomas Auf der Heyde (Department of Science and Technology, South Africa, representing the Minister)

Amadou Tidiane Ba (Minister of Higher Education and Scientific Research, Senegal)

Abdelaziz Benjouad (Scientific Director, National Centre for Scientific Research and Technology, Morocco)

Jane Mubanga Chinkusu (Director, Department of Science and Technology, Zambia, representing the Minister)

Hamed Ben Dhia (President, University of Sfax, Tunisia, representing the Minister)

Henri Dzinotyiweyi (Minister for Science and Technology Development, Zimbabwe)

Zohra Ben Lakhdar (L'Oreal Prize Winner, Tunisia)

Simon Lokodo (Minister of Tourism, Trade and Industry, Uganda)

Bayero Nafada (Deputy Speaker, House of Representatives, National Assembly, Nigeria)

Grace Oladunni Olaniyan-Taylor (L'Oreal Prize Winner, Nigeria)

Bouba Oumarou (Rector, University I, Yaoundé, Cameroon, representing the Minister)

*10:30 Coffee break*

**11:00 Science in Asia**

Chair: Katepalli R. Sreenivasan (former Director, ICTP)

Shamsher Ali (President, Bangladesh Academy of Sciences)

Ali Chamseddine (Founding Director of the Center for Advanced  
Mathematical Sciences, Lebanon)

Jia-Er Chen (National Natural Science Foundation of China)

Rohini Godbole (Indian Institute of Science)

M.S. Narasimhan (TIFR, India)

Hamid Saleem (Director, National Centre for Physics, Pakistan)

Spenta Wadia (Tata Institute of Fundamental Research, India)

Yu Lu (Chinese Academy of Sciences)

Khatijah Bt. Mohd. Yusoff (Deputy Secretary General (Science), Ministry of  
Science, Technology & Innovation, Malaysia)

**12:00 Science in Eastern Europe and the Balkans**

Chair: Rexhep Meidani (former President of Albania and Member, Club of  
Madrid)

Goran Djordjevic (Executive Director, SEENET-MTP, Serbia)

Nana Shatashvili (Andronikashvili Institute of Physics, Georgia)

Maciej Kolwas (President, European Physical Society)

Namik K. Pak (Middle East Technical University, Turkey)

Giorgio Rosso Cicogna (Alternate Secretary General, Central European  
Initiative (CEI))

Engelbert Ruoss, (Director, UNESCO Venice Office)

Nicolae Victor Zamfir (Director General, Horia Hulubei National Institute  
of Physics and Nuclear Engineering (NIPNE), Romania)

*12:50 Lunch*

**14:30 Science in Latin America and Caribbean**

Chair: Miguel A. Virasoro (former Director, ICTP)

Carlos Aragão (President, Conselho Nacional de Desenvolvimento Científico e Tecnológico, Brazil)

Alejandro Ceccatto (Deputy Minister, Ministry of Science, Technology and Productive Innovation, Argentina)

Rosa Maria Amaya Fabián de López (Secretary of Science, Guatemala)

Karen Hallberg (Argentinian Physics Association)

Jean Vernet Henry (Rector, University of Haiti)

Victor Latorre (Academy of Sciences, Peru)

Carlos Ordoñez (Panama, University of Houston)

José Luis Moran López (Mexican Physical Society)

Celso Pinto de Melo (President, Brazilian Physical Society)

Eduardo Posada (Centro Internacional de Física and President of the Colombian Association for the Advancement of Science)

Veronica Riquer (Mexico, University of Rome La Sapienza)

Marta Rovira (President, CONICET, Argentina)

*15:45 Coffee break*

**16:15 Panel discussion**

A summary of key points made during the morning and afternoon sessions

Chair: Peter Goddard (Director, IAS, Princeton)

Rapporteurs:

Africa: Romain Murenzi (Director, AAAS-Center for Science, Technology, and Sustainable Development, former Minister of Science, Rwanda)

Asia: Tsou Sheung Tsun (Mathematical Institute, University of Oxford)

Eastern Europe and the Balkans: Yanko Yanev (IAEA)

Latin America and the Caribbean: Leticia Cugliandolo (Director, Les Houches School of Physics)

**17:15 2010 ICTP Prize and lecture: “Fluid Dynamics from Gravity”**

Shiraz Minwalla, a string theorist at the Tata Institute of Fundamental Research (TIFR) in Mumbai, India, has been named the recipient of the 2010 ICTP Prize.

## DAY 3

### Wednesday 10 November World Science Day

#### 25th anniversary, ICTP's Dirac Medal

Chair: Professor Luis Alvarez-Gaume (CERN)

ICTP's Dirac Medal, first awarded in 1985, is given in honour of P.A.M. Dirac, one of the greatest physicists of the 20th century and a staunch friend of the Centre. It is awarded annually to scientists who have made significant contributions to theoretical physics. Many Dirac medallists have gone on to win even more prestigious prizes, including the Nobel Prize, the Wolf Prize, and the Fields Medal.

09:00 2010 Dirac Medal lecture:

E.C.G. Sudarshan: **"Half a century of physics: problems and solutions"**

09:45 *Coffee break*

#### 10:30 **Lectures by past Dirac medalists:**

Roman Jackiw: "Fractional charge, Majorana fermions: the Physics of isolated zero modes"

Helen Quinn: "Scale hierarchies in gauge theories and beyond"

John Iliopoulos: "New Physics at the LHC"

Giorgio Parisi: "Theoretical progresses in off-equilibrium behaviour"

12:15 *Lunch*

#### 14:00: **Lectures by past Dirac medalists:**

John H. Schwarz: "Superconformal field theories"

Michael B. Green: "Connections between string theory and perturbative supersymmetric quantum field theory"

Sergio Ferrara: "Black holes and supergravity"

Joseph Polchinski: "Holography and Unification"

Cumrun Vafa: "Strings and Geometry"

16:00 *Coffee break*

**16:30 Lectures by past Dirac medalists:**

Stephen L. Adler: "Localising numerical integration by  $2^p$  subdivisions in  $p$  dimensions"

Vladimir E. Zakharov: "Some physical applications of weak turbulent theory"

Roberto Car: "Quantum mechanics in a glass of water"

Michele Parrinello: "The phase diagram of Sodium or using a sledgehammer to crack a nut"

**18:15 Closing session:**

Giuseppe Pizza (Vice Minister for Education, University and Scientific Research, Italy)

Fernando Quevedo (Director, ICTP)