

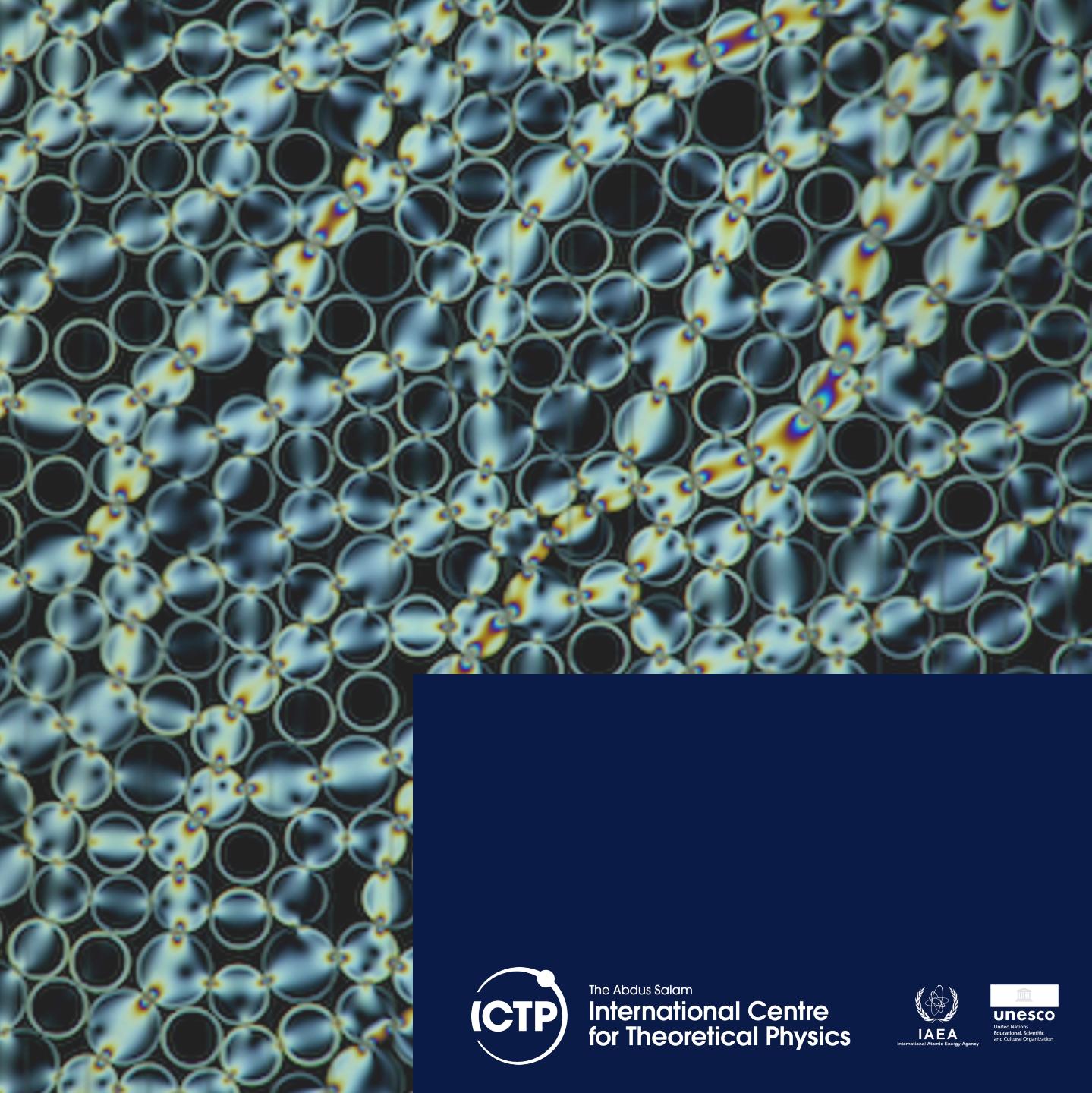
ICTP:

World-class Research and a Successful Model of International Collaboration



Public Information Unit

60 ICTP
1964–2024



The Abdus Salam
International Centre
for Theoretical Physics

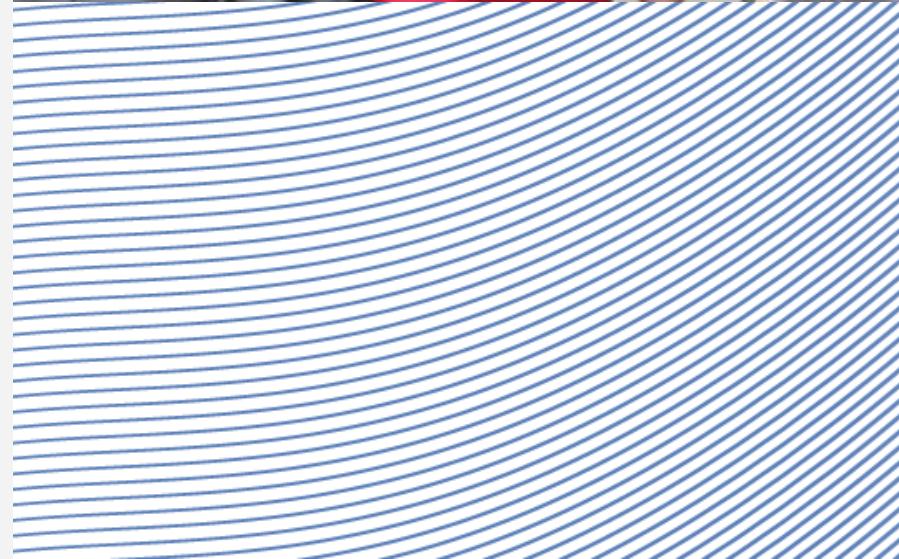


International Atomic Energy Agency

United Nations
Educational, Scientific
and Cultural Organization

What is ICTP?

- Founded in 1964 by Nobel Laureate Abdus Salam to enhance international cooperation through science.
- Combines world class research with a unique global mission of building science capacity in the developing world.
- Governed by tripartite agreement between Italy UNESCO and IAEA.



What is ICTP?

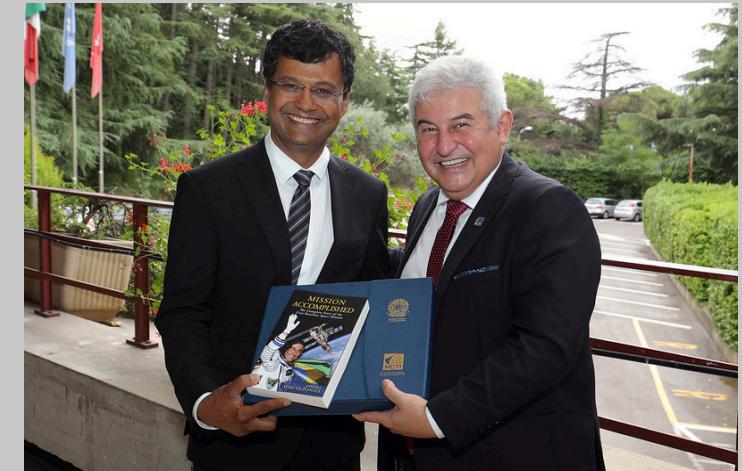
Research

A blackboard filled with mathematical equations and diagrams related to research in physics or mathematics. The board includes handwritten text and diagrams such as:
- A diagram showing a coordinate system with axes labeled J_{ij} , S_i , S_j , $-K_{ij}$, FM , $M_{q=0}^2$, \rightarrow uniform h .
- Equations involving F_{ext} , $M_{q=0} = m_1 m_2$, $M_{q=Q} = m_2 m_1$, $(J_{ij}) \sim e^{-2J_0}$, $S_i - 3(\vec{S}_i, \vec{n})(\vec{S}_j, \vec{n})$, $R^2 h_i < S_i^2 S_j^2$, $R^2 h_i < S_i^2 S_j^2$, $P(J) \sim e^{-\frac{(J-J_0)^2}{2J_0}}$, and $M_{q=0}^2 = \begin{cases} 0 & \text{above } T \\ 0 & \text{below } T \end{cases}$.
- A graph of a function $e^{-x^2/2}$ with a peak at $x=0$.

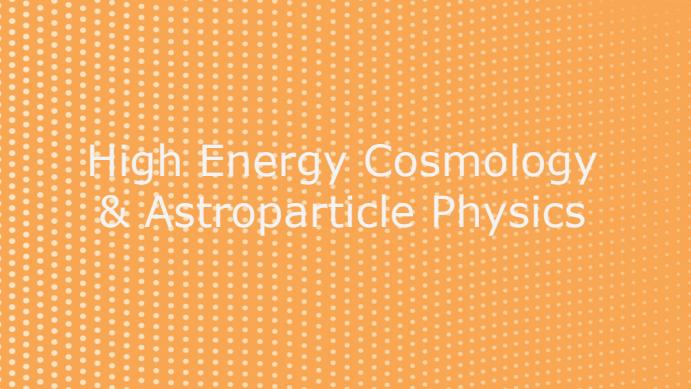
Education



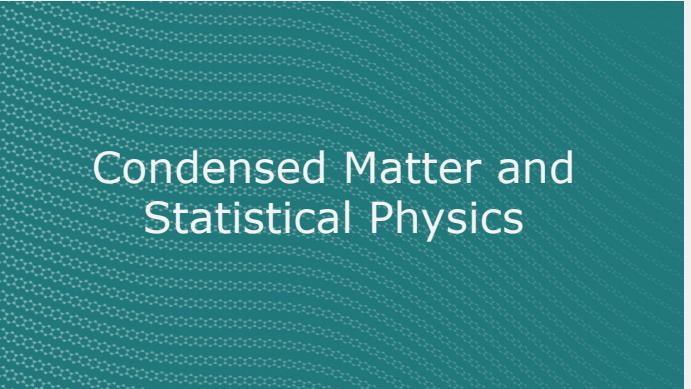
Cooperation



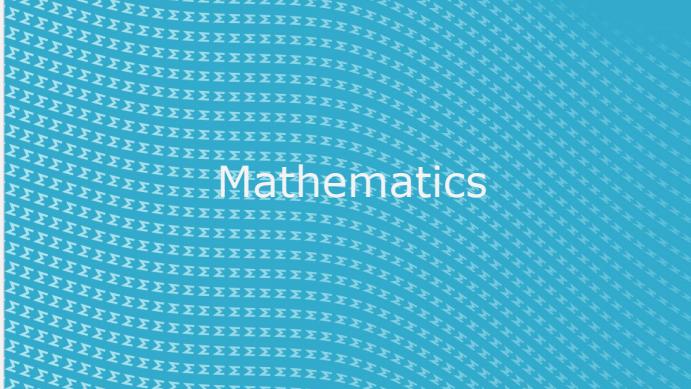
Research Sections



High Energy Cosmology
& Astroparticle Physics



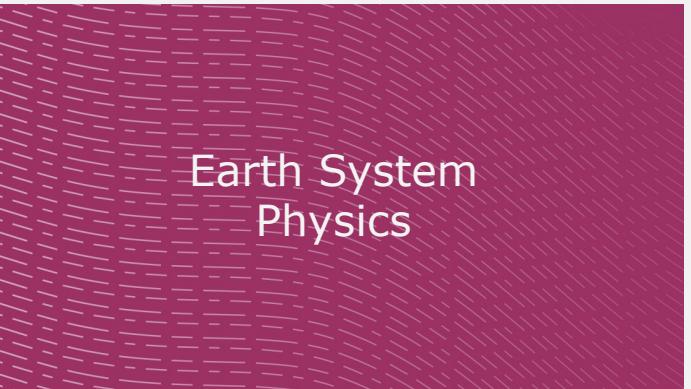
Condensed Matter and
Statistical Physics



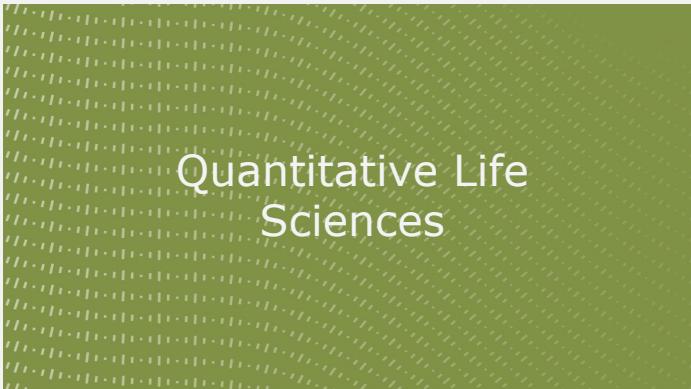
Mathematics



Science, Technology and
Innovation



Earth System
Physics



Quantitative Life
Sciences

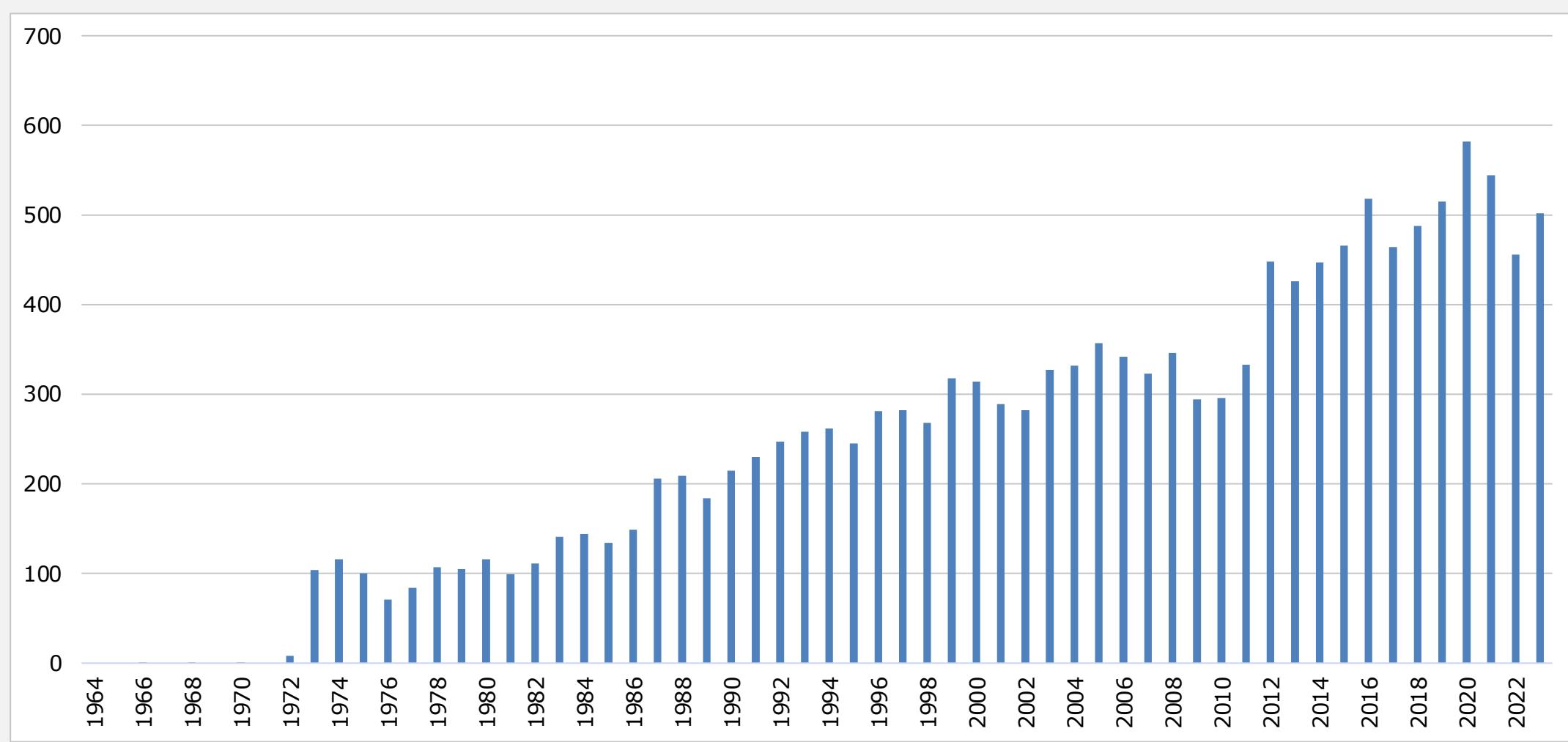
Also: Sustainable Energy and High Performance Computing

Nobel-worthy Contributions

Research at ICTP and its Partner Institutes has contributed to 5 Nobels:

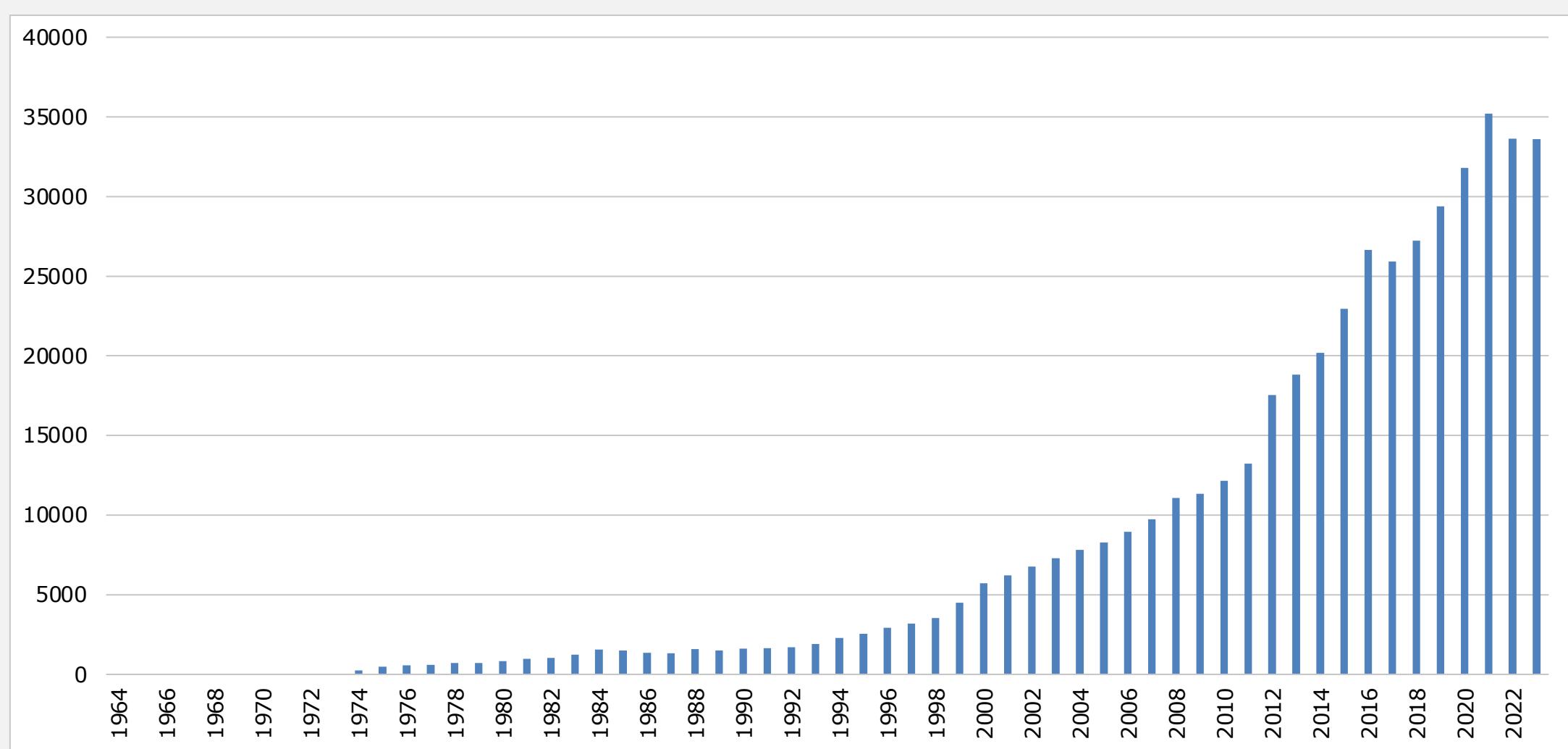
- **Physics Nobel 1979:** ICTP founder Abdus Salam
- **Nobel Peace Prize 2007:** ICTP's Earth System Physics scientist Filippo Giorgi's work with IPCC
- **Physics Nobel 2013:** ICTP's High Energy Physics section contributed to ATLAS discovery of Higgs Boson
- **Physics Nobel 2015:** Prize confirmed theory of solar neutrino oscillations co-developed by ICTP scientist Alexei Smirnov
- **Physics Nobel 2017:** Gravitational wave detection by LIGO (ICTP-SAIFR collaborated)

Papers produced within ICTP



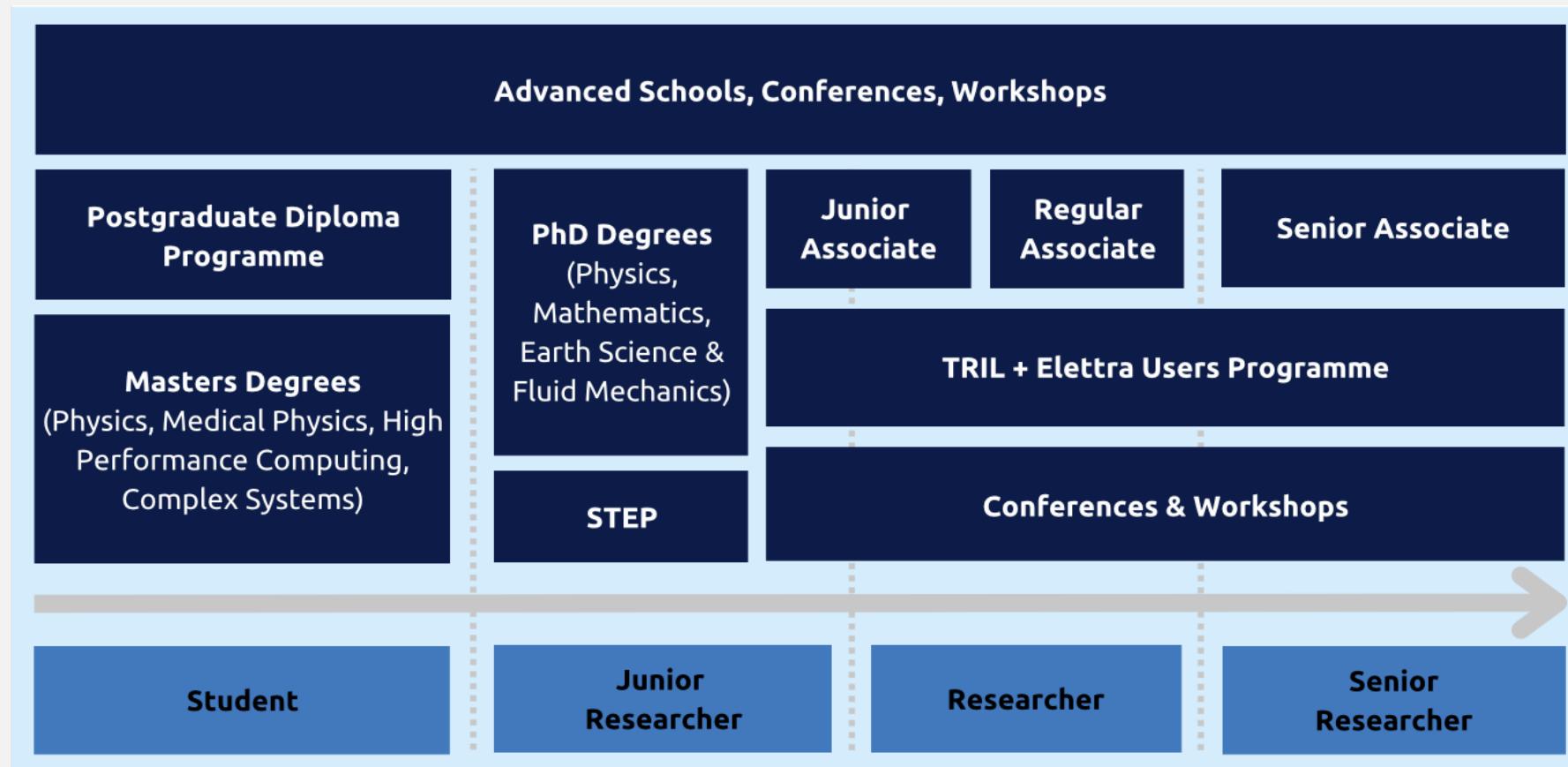
Papers listed by final publication year

Citations of ICTP papers



ICTP Programmes:

Supporting Scientists in all Stages of their Careers



ICTP Degree Programmes

- PhD in Physics (with University of Trieste)
- PhD in Physics and Mathematics (with SISSA)
- PhD in Earth Science and Fluid Mechanics (with University of Trieste)
- Masters in Medical Physics (with University of Trieste)
- Masters in High Performance Computing (with SISSA)
- Master of Complex Systems (with consortium of European universities)

ICTP's Postgraduate Diploma Programme: Preparing Young Scholars for PhD Studies

Since 1991:

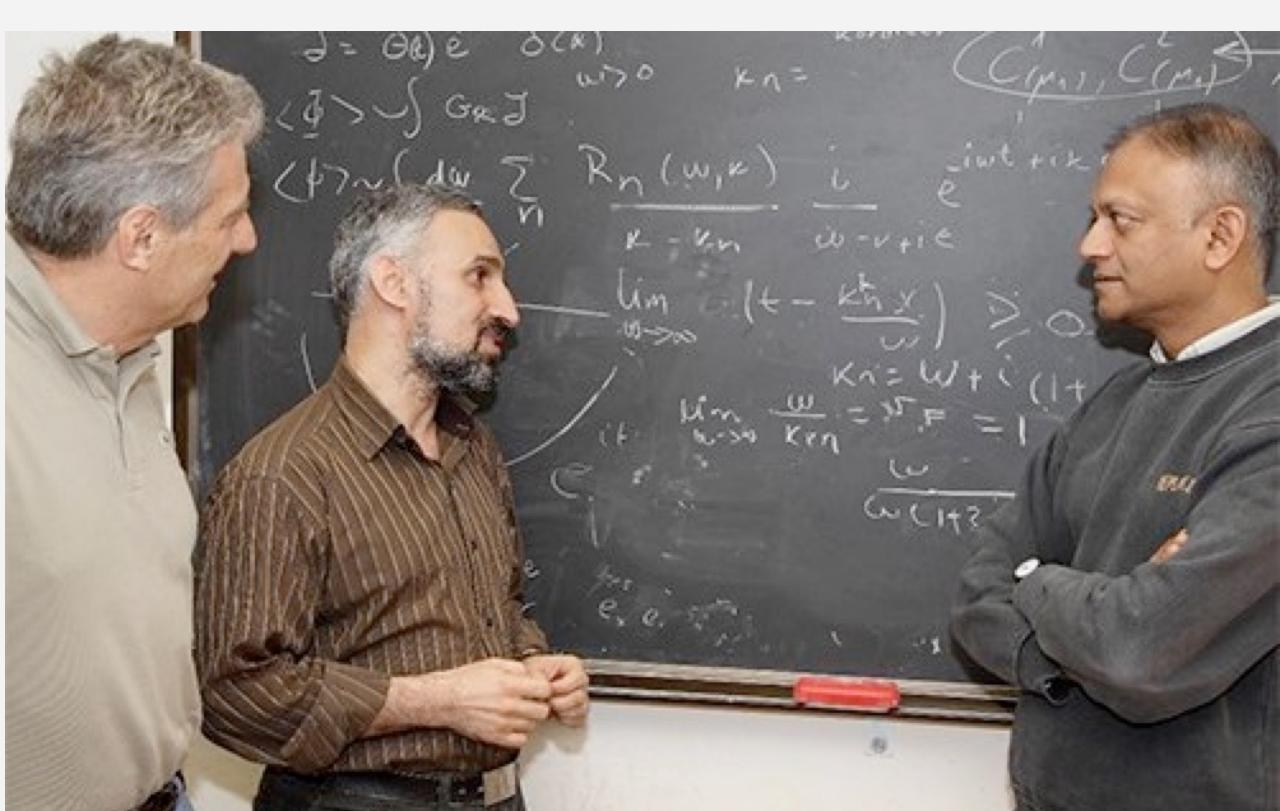
- **1000+** Diploma graduates
- More than **75%** earned or working toward PhDs



Associates Programme:

Working Together at ICTP

- **3,000+** Associates since 1964
- 6 year term, visits to IAEA to collaborate with ICTP Scientists
- Simons Associates may also bring a student



ICTP: An International Hub for Scientific Networking

- Organises more than **60** conferences & workshops each year.
- Welcomes up to more than **6,000** scientists from **150+** nations each year.
- Attracts an additional **1,000-2,000** scientists per year through hosted activities.

ICTP Visiting Scientists: Where do they come from?

SINCE 1970:

More than

180,000

visits

from scientists from
188 countries around
the world

IN 2023:

32%

of visitors were women

59%

of visitors were from
developing and least-
developed countries



ICTP: Long tradition of Scientific Capacity Building in Developing Countries

- External Activities Unit
- Partner Institutes (Brazil, China, Mexico, Rwanda)
- Physics Without Frontiers
- SciFabLab, Multidisciplinary Laboratory (MLab) & Marconi Laboratory

ICTP Impact 2022



ICTP Success Stories



Freddy Cachazo, Venezuela
Diploma Alumni (1996-97)

- Recipient, 2014 New Horizons Prize
- Gribov Medallist 2009
- Dyson Chair, Perimeter Institute



Zohra Ben Lakhdar, Tunisia
ICTP Associate

- Recipient, 2005 L'Oreal-UNESCO Award for Women in Science
- Founding member, Tunisian Physics Society and Tunisian Astronomy Society
- Professor of Physics, Tunis El Manar University



Narayan Adhikari, Nepal
Diploma Alumni (1997-98)

- ICTP Regular Associate 2008-15
- ICTP Senior Associate 2018-23
- Research group leader, Tribhuvan University, Nepal

“Over the years, ICTP has left a deep legacy in performing and promoting outstanding fundamental scientific research. In particular, it has had a major impact supporting science in developing countries.”

STEPHEN HAWKING

UNIVERSITY OF CAMBRIDGE

“Much good emanates from ICTP. Salam's vision of a facility that couples the doing of first-rate research with advanced scientific training has been overwhelmingly vindicated and validated.”

DAVID GROSS

**NOBEL LAUREATE IN PHYSICS 2004 AND DIRECTOR OF THE KAVLI INSTITUTE FOR
THEORETICAL PHYSICS**



Thank you!